WORLDS OF TOMORROW

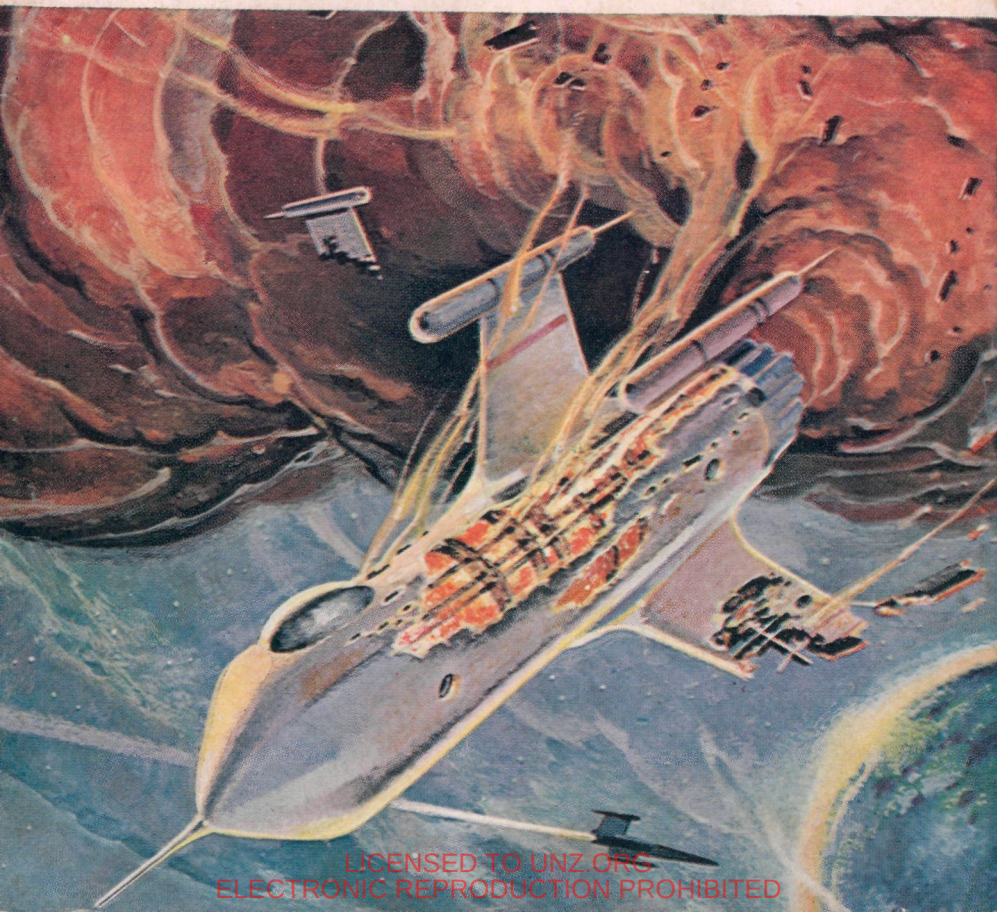
MARCH • 1965 • 50c

WORLD OF PTAVVS
Larry Niven

SCARFE'S WORLD
Brian W. Aldiss

PARIAH PLANET
Lloyd Biggle, Jr.

PHOBOS: MOON OR ARTIFACT
Robert S. Richardson



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

WORLDS OF TOMORROW

Fastest-Growing New Science-Fiction Magazine!

Don't mail the coupon—if you want to keep the magazine intact—just order on a plain sheet of paper—but, however you do it, rush in your subscription order to **WORLDS OF TOMORROW** now! This is the magazine that readers call "the best thing that's happened to science fiction in a dozen years"—the magazine that has already brought you great novels by Arthur C. Clarke and Philip K. Dick—novelettes and complete short novels by Murray Leinster, Keith Laumer, J. T. McIntosh and a dozen other favorite writers, etc. Every issue is new . . . exciting . . . enjoyable! Don't wait—subscribe today!

IF YOU'VE MISSED BACK ISSUES—

You can order them separately at 50¢ each postpaid—OR—list issues desired below and we will ship them at once and deuct that number from your subscription.

WORLDS OF TOMORROW, Subscription Department
421 Hudson Street, New York, N. Y. 10014

Send me the next THIRTEEN ISSUES of Worlds of Tomorrow at your special price of only $4.50. I enclose payment herewith. My subscription is ☐ new, ☐ renewal.

Name .....

Address .....

City..... Zone..... State.....

If you want back issues, check attached box. One subscription issue will be subtracted for each back issue you order.

Send me back issues as follows:

☐ #1, ☐ #2, ☐ #3,

☐ #4, ☐ #5, ☐ #6.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

WORLDS OF TOMORROW®

MARCH 1965
Vol. 2 No. 6
ISSUE 12

ALL NEW STORIES

FREDERIK POHL
Editor

SOL COHEN
Publisher

DIANE SULLIVAN
Associate Editor

DAVID PERTON
Production Manager

DAVE GELLER ASSOC.
Advertising

MAVIS FISHER
Subscription Manager

Cover by SCHELLING for WORLD OF PTAVVS

CONTENTS

COMPLETE NOVEL

WORLD OF PTAVVS 8
by Larry Niven

NOVELETTES

SCARFE'S WORLD 104
by Brian W. Aldiss
Scarfe's world was of no importance whatsoever . . . except to its inhabitants!

PARIAH PLANET 136
by Lloyd Biggle, Jr.

SHORT STORY

BY WAY OF MARS 126
by Ron Goulart

SPECIAL FEATURES

UNDERSEA WEAPONS TOMORROW 93
by Joseph Wesley

PHOBOS: MOON OR ARTIFACT? 118
by R. S. Richardson

DEPARTMENTS

EDITORIAL by Frederik Pohl 4

COMING . . TOMORROW! 92

WORLDS OF TOMORROW is published bi-monthly by GALAXY PUBLISHING CORP. Main Offices: 421 Hudson Street, New York 14, N.Y. 50c per copy. Subscription (6 copies) $2.50 per year in the United States, Canada, Mexico, South and Central America and U. S. Possessions. Elsewhere $3.50. Application for second class entry pending at New York, N.Y., and at additional mailing offices. Copyright New York 1965, by Galaxy Publishing Corp. Robert M. Guinn, President. All rights, including translations reserved. All material submitted must be accompanied by self-addressed stamped envelopes. The publisher assumes no responsibility for unsolicited material. All stories in this magazine are fiction, and any similarity between characters and actual persons is coincidental. Printed in the U.S.A. By The Guinn Co., Inc., N.Y. Title Reg. U.S. Pat. Off.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE UNIVERSE

—and how it began!

Larry Niven, who is rapidly becoming one of our favorite writers, has a trait which we admire, and put into print when we can, and would like to encourage. To put it as simply as possible, he seems to write with his brain in series. When you read a Larry Niven story you get the feeling that there is a certain amount of intellection going on; that he not only knows what he wants his characters to do and how you are supposed to feel about them, but what the world is like around them, and even what the universe is like that brought them to birth.

That's one of the reasons why we liked his story in this issue, and why we felt pretty sure you would like it too. Reading it, you get a picture of the size of the universe, in time as well as in space, not too easy to come by. It makes you think . . .

Of course, for some people that's quite a chore!

One of the things it made us think about was the nature of the physical universe itself, and above all that hugest of questions, what started it all?

We had the pleasure recently of hearing Fred Hoyle speak at Princeton University on this very question, among others. It was a fine lecture—of course! Even more rewarding than the lecture itself, we shared a railroad car with Hoyle and Lyman Spitzer, going back to New York after the lecture was over, and, without shame, did our best to eavesdrop on one of the most fascinating conversations imaginable. We developed a severe grudge against the Pennsylvania Railroad for operating such noisy rolling stock, but all in all it was a rewarding and stimulating hour.

Fred Hoyle, of course, is the steady-state man. His hypothesis is that the universe never had a beginning and never stops expanding. We see the galaxies recede, and some cosmologies explain this measurable, constant increase of distance as the effects of a primordial ex-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

plosion; but Hoyle says it isn't that at all. There never was an explosion. What is happening is that, always and everywhere, new particles of matter are coming into being, and each new particle brings with it a new quantum of space, and thus more space is always being generated between the galaxies as new hydrogen clouds are born. Then they in their turn coalsce, form suns and galaxies . . . and appear to recede from each other.

In his Princeton lecture Hoyle touched on those fascinating enigmas, the quasi-stellars or quasers—masses as huge and as bright as a galaxy, but apparently consisting of only one single star. What are they? What makes them so bright? We know what makes stars work—principally nuclear reactions—but there simply is not enough energy in atomic processes to produce the sort of outpouring characteristic of a quaser. But there is one process that might account for it, says Hoyle: gravitational infall.

Infall of what?

Why, infall of clouds of gas . . . very possibly the gas that has just been born out of nowhere in the steady-state process. So a quaser isn't a star, and it isn't a galaxy . . . but it may well be the birthpangs of one!

If cosmologies are to your taste, we've just finished reading a book that we can recommend without reservation. It's called *Great Ideas and Theories of Modern Cosmology* (Dover), and it's by Jagjit Singh, who gives every appearance of understanding, and being able to communicate, the main features of every cosmological idea that has ever been proposed. There's a fine section on Hoyle, for example; there are good ones on Newton, Eddington and Einstein. The one that appealed to us most of all, however, as a handy method of catching some understanding of what a high-powered thinker is thinking of, was the part that dwelt with Paul M. Dirac.

Dirac is not a steady-state cosmologist; in fact, he's just about the opposite. His universe evolves. It not only expands like those of Gamow and many others, but it changes its properties as it does so. This is a vertiginous concept, especially when you hear about his conclusion that the force of gravity is continually weakening with age. But Singh's book traces out the reasoning, and even a layman can follow the deductive processes that produce this conclusion.

He starts with the idea of "dimensionless numbers". What is a dimensionless number? It is just a way of stating proportions without worrying about what the particular units of measurement are. We are all intuitively conscious of the need for such a thing, in some degree, when we first come across an expression like $e=mc^2$. What do you mean by "e" — foot-pounds, ergs or calories? What do you mean by "m"? And "c" is the worst of all—the speed of light, sure, but is it 186,000 miles per second, or 30,000,000,000 centimeters per second, or some large number of versts per fortnight or

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

furlongs per decade?

A dimensionless number (so says Buckingham's Second Theorem of Dimensional Analysis) can substitute for any complete physical equation. That is, you can say the same thing, but in terms which are independent of whatever units of measurement were used.

Having started at this point, Dirac went on to examine a few dimensionless numbers. He took the relationship between electric and gravitational force (called the "force constant") for one, and discovered that the number representing it was 2.4×10^{39}. That is, electrical force between two particles is that much greater than the gravitational force between them—it doesn't matter in what unit you measure the force.

Again, you can represent the age of the universe by a dimensionless number. (The basic unit is the length of time light takes to move a standard atomic distance.) This dimensionless number is 2.3×10^{39}.

Or you can compute the total number of particles in the universe, and reach a dimensionless number of about 10^{78}—which is, of course, the square of 10^{39}.

At this point we observe that we have a coincidence. Three basic dimensionless numbers describing our universe turn out to be either the same, or that one is the square of the other. Dirac went on to derive a number of others, and just about all of them clustered around those two values—the first number, or its square.

Coincidence?

This much of a coincidence, thought Dirac, can be no coincidence. Not only that, but he would not accept that other coincidence which might say that he had just happened to be born into the universe at the one unique point in time when its age turned out to be a function of its mass, the force constant, etc. One had to be a function of the others. And if that were so—

Why then, as the universe grew older, the other numbers would also grow larger. More particles. More mass. Above all, a larger figure for the force constant—meaning that gravity became progressively weaker. And contrariwise, of course, ages ago, gravity must have been relatively stronger.

This deduction nicely explains some puzzling questions "for example, continental drift: as gravity weakens the earth expands, thus increasing the surface area and causing the continents to slip apart". But it also comes up against some well established evidence like the observation that the radiation of the sun has been constant for at least some hundreds of millions of years. (If gravity were stronger than the sun should have radiated much more energy—boiling the seas, destroying all life. But it didn't, for if it had we wouldn't be here.)

Unfortunately, most of the available cosmologies seem to come up against some such array of facts which refused to fit them. You won't find final answers in this book of Jagjit Singh's . . . but in pondering the questions you'll travel a thoughtful and exciting road.

— THE EDITOR

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

These great minds were Rosicrucians . . .

WHAT SECRET POWER DID THEY POSSESS?

Benjamin Franklin

Isaac Newton

Francis Bacon

Why were these men great?

How does anyone — man or woman — achieve greatness? Is it not by mastery of the powers within ourselves?

Know the mysterious world within you! Attune yourself to the wisdom of the ages! Grasp the inner power of your mind! Learn the secrets of a full and peaceful life!

Benjamin Franklin, statesman and inventor... Isaac Newton, discoverer of the Law of Gravitation . . . Francis Bacon, philosopher and scientist . . . like many other learned and great men and women . . . were Rosicrucians. The Rosicrucians (NOT a religious organization) have been in existence for centuries. Today, headquarters of the Rosicrucians send over seven million pieces of mail annually to all parts of the world.

The ROSICRUCIANS

San Jose (AMORC) California, U.S.A.

THIS BOOK FREE!

Write for your FREE copy of "The Mastery of Life" — TODAY. No obligation. A non-profit organization. Address: Scribe Y.C.A.

Scribe Y.C.A.
The ROSICRUCIANS
(AMORC)
San Jose, California, U.S.A.

SEND THIS COUPON

Please send me the *free* book, *The Mastery of Life*, which explains how I may learn to use my faculties and powers of mind.

Name_____

Address_____

City_____

State_____

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

WORLD OF PTAVVS

by LARRY NIVEN

Illustrated by GAUGHAN

The planet was ripe for plundering. How could those quaint, weak humans stand against the Power of a thrint?

I

The moment was so short that it could not be measured. Yet it was far too long. It seemed that every mind in the universe, every mind that had ever been or that would ever be, was screaming its deepest emotions at him.

Then it was over. The stars had changed again.

Even for Kzanol, who was a good astrogator, there was no point in trying to guess where the ship was now. At .93 lights, the speed at which the average mass of the universe becomes great enough to permit entry into hyperspace, the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

stars become unrecognizable. Ahead they flared blue, behind they were dull red, and to the sides they were compressed and flattened into tiny lenses. So Kzanol sucked a gnal until the ship's brain board made a thudding sound, then went to look.

The brain's screen said, "Reestimate of the ship's landing time: 1.72 days."

Not good, he decided. He should have come out much closer to Thrintun. But luck, more than skill, decided when a hyperspace ship would make port. There was no need to be impatient. Besides, it would be several hours before the fusor recharged the battery.

Kzanol swung his chair around so he could see the star map on the rear wall. The sapphire pin seemed to twinkle and gleam across the length of the cabin. For a moment he basked in its radiance, the radiance of unlimited wealth. Then he jumped up and began typing on the brain board.

Sure there was reason to be impatient! Even now someone might be landing on the planet he had named Racarliwun. There were ships all through that region of space.

The wonder was that nobody had found the planet earlier. Even now, somebody with a map just like his, and a pin where Kzanol had inserted his sapphire marker, might be racing to put in a claim. The control of an entire slave world, for all of Kzanol's lifetime, was his rightful property; but only if he reached Thrintun first.

He typed: "How long to recharge the battery?"

The brain board thudded almost at once. But Kzanol was never to know the answer.

Suddenly a blinding light shone through the back window. Kzanol's chair flattened into a couch, a loud musical note rang, and there was pressure. Terrible pressure. The ship wasn't supposed ever to use that high an acceleration. It lasted for about five seconds. Then —

There was a sound like two lead doors being slapped together, with the ship between them.

The pressure eased. Kzanol got to his feet and peered out the rear window at the incandescent cloud that had been his fusor. It had exploded.

The brain board thudded.

He read: "Time to recharge battery:" — followed by the spiral hieroglyph, the sign of infinity.

With his face pressed against the molded diamond pane, Kzanol watched the burning power plant fade among the stars. The brain must have dropped it the moment it became dangerous. That was why it had been trailed half a mile behind the ship: because fusors sometimes exploded. Just before he lost sight of it altogether, the light flared again into something brighter than a sun.

Thud, said the brain. Kzanol read: "Reestimate of trip time to Thrintun:" — followed by a spiral.

The light of the far explosion reached the ship. There was no sound, but it was like a distant door slamming.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

There was no hurry now. For a long time Kzanol stood before his wall map, gazing at the sapphire pin.

The tiny star in the tiny jewel winked back at him, speaking of two billion slaves and a fully industrialized world waiting to serve him; speaking of more wealth and power than even his grandfather, the great Racarliw, had known. He was chain-sucking, and the eating tendrils at the corners of his mouth writhed without his knowledge, like embattled earthworms. Useless regrets filled his mind.

His grandfather should have sold the plantation when Plorn's slaves produced antigravity. Plorn could and should have been assassinated in time. Kzanol should have stayed on Thrintun,—even if he had to slave it for a living. He should have bought a spare fusor instead of that extra suit and the deluxe crash couch and the scent score on the air plant and, with his last commercial, the sapphire pin.

For a time he relived his life on the vast stage-tree plantation where he had become an adult. Kzathit Stage Logs, with its virtual monopoly on solid fuel takeoff logs, now gone forever. If only he were there now...

But Kzathit Stage Logs had been a spaceport landing field for almost ten years.

He went to the locker and put on his suit. There were two suits there, including the spare he'd bought in case one ceased to function. Stupid. If the suit had failed he'd have been dead anyway.

He ran a massive, stubby finger around the panic button on his chest. He'd have to use it soon; but not yet. There were things to do first. He wanted the best possible chance of survival.

At the brain board he typed: "Compute a course for any civilized planet, minimum trip time. Give trip time."

The brain purred happily to itself. Sometimes Kzanol thought it was happy only when it was working hard. He often tried to guess at the emotions of the machine. It bothered him that he couldn't read its mind. Sometimes he even worried about his inability to give it orders except through the brain board. Perhaps it was too alien, he thought; thrintun had never made contact with other than protoplasmic life. While he waited for his answer he experimentally tried to reach the rescue switch on his back.

He hadn't a chance; but that was the least of his worries. When he pushed the panic button the suit stasis field would go on, and time would cease to flow inside his suit. Only the rescue switch would protrude from the field. It had been placed so that Kzanol's rescuer, not Kzanol, could reach it.

Thud! The screen said: "No solution."

Nonsense! The battery had a tremendous potential. Even after a hyperspace jump it must still have enough energy to aim the ship at some civilized planet. Why would the brain...

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THRINT

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Then he understood. The ship had power, probably, to reach several worlds, but not to slow him down to the speed of any known world. Well, that was all right. In his stasis field Kzanol wouldn't care how hard he hit. He typed: "Do not consider decrease of velocity upon arrival. Plot course for any civilized planet. Minimize trip time."

The answer took only a few seconds. "Trip time to Awtprun seventy-two Thrintun years 100.41 days."

Awtprun. Well, it didn't matter where he landed; he could hop a ship for Thrintun as soon as they turned off his field generator. Would some other prospector find Racarliwun in seventy-two years? Probably.

Spirit of the Power! Hurriedly he typed, "Cancel course to Awtprun." Then he sagged back in his chair, appalled at his narrow escape.

If he had hit Awtprun at more than nine-tenths light, he could have killed upwards of a million people. That was assuming he hit an ocean! The shock wave would knock every flying thing out of the air for a thousand miles around, and scour the land clean; sink islands, tear down buildings half around the world.

For a blunder like that, he'd draw death after a year of torture. Torture in the hands of a highly scientific, telepathic society is a horrible thing. Biology students would watch, scribbling furiously, while members of the Penalty Board carefully traced his nervous system with stimulators...

Gradually his predicament became clear to him. He couldn't land on a civilized planet. All right. But he couldn't land on a slave planet either; he'd be certain to knock down a few overseer's palaces, as well as killing billions of commercials worth of slaves.

Perhaps he could aim to go through a system, hoping that the enlarged mass of his ship would be noticed? But he dared not do that. To stay in space was literally unthinkable. Why, he might go right out of the galaxy! He saw himself lost forever between the island universes, the ship disintegrating around him, the rescue button being worn down to a small shiny spot by interstellar dust... No!

Gently he rubbed his closed eye with an eating tendril. Could he land on a moon? If he hit a moon hard enough the flash might be seen. But the brain wasn't good enough to get him there, not at such a distance. A moon's orbit is a twisty thing, and he'd have to hit the moon of a civilized planet. Awtprun's was the closest, and even it was much too far.

And to top it off, he realized, he was sucking his last gnal. He sat there feeling sorry for himself until it was gone, then began to pace the floor

Of course!

He stood stock still in the middle of the cabin, thinking out his inspiration, looking for the flaw. He couldn't find one. Hurriedly he tapped at the brain board: "Compute course for a food planet minimizing trip time. Ship need not slow on arrival. Give details."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

His eating tendrils hung limp, relaxed. It's going to be all right, he thought, and meant it.

For protoplasmic life forms, there are not many habitable planets in the galaxy. Nature makes an unreasonable number of conditions. To insure the right composition of atmosphere, the planet must be exactly the right distance from a G type sun, must be exactly the right size, and must have a freakishly oversized moon in its sky. The purpose of the moon is to strip away most of the planet's atmosphere, generally around ninety nine per cent of it. Without its moon a habitable world becomes shockingly uninhabitable; its air acquires crushing weight, and its temperature becomes that of a 'hot' oven.

Of the two hundred and nineteen habitable worlds found by Thrintun, sixty-four had life. Seventeen had intelligent life; eighteen if you were liberal-minded. The one hundred and fifty-five barren worlds would not be ready for Thrintun occupancy until after a long seeding process. Meanwhile, they had their uses.

They could be seeded with a tnuctipun-developed food yeast. After a few centuries the yeast generally mutated, but until then the world was a food planet, with all its oceans full of the cheapest food in the galaxy. Of course only a slave would eat it; but there were plenty of slaves.

All over the galaxy there were food planets to feed the slave planets. The caretaker's palace was always on the moon. Who would want to live on a world with barren land and scummy seas? Not to mention the danger of contamination. So from the moons a careful watch was kept on the food planets.

After the yeast had mutated to the point where it was no longer edible, even to a slave, the world was seeded with yeast-eating whitefood herds. Whitefoods ate anything, and were a good source of meat. The watch was continued.

At his present speed Kzanol would hit such a planet hard enough to produce a blazing plume of incandescent gas. The exploded rock would rise flaming into space, vivid and startling and unmistakeable even to a watcher on the moon. The orange glow of the crater would last for days.

The chances were that Kzanol would end underground, but not far underground. The incandescent air and rock which moves ahead of a meteorite usually blows the meteorite itself back into the air, to rain down over a wide area. Kzanol, wrapped safely in his stasis field, would go right back out his own hole, and would not dig himself very deep on the second fall. The caretaker could find him instantly with any kind of rock-penetrating instrument. A stasis field is the only perfect reflector.

The brain interrupted his planning. "Nearest available food planet is F124. Estimated trip time 202 years 91.4 days."

Kzanol typed: "Show me F124 and system."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The screen showed specks of light. One by one, the major planets and their moon systems were enlarged. F124 was a typical food planet, even to the fact that its moon did not rotate. The moon seemed overlarge, but also overdistant. An outer planet made Kzanol gasp in admiration. It was ringed! Gorgeously ringed. Kzanol waited until all the major worlds had been shown. When the asteroids began to appear in order of size he typed: "Enough. Follow course to F124."

He'd left the helmet off; other than that he was fully dressed for the long sleep. He felt the ship accelerating, a throb in the metal from the motors. The cabin's acceleration field canceled the gees. He picked up the helmet and set it on his neck ring, changed his mind and took it off. He went to the wall and tore off his map, rolled it up and stuck it through the neck ring into the bosom of his shirt. He had the helmet ready to tog down when he started to wonder.

His rescuer could claim a large sum for the altruistic act of rescuing him. But suppose the reward didn't satisfy him? If he were any kind of thrint he would take the map as soon as he saw it. After all, there was no law against it. Kzanol had better memorize the map.

But there was a better answer.

Yes! Kzanol hurried to the locker and pulled out the second suit. He stuffed the map into one arm. He was elated with his discovery. There was plenty of room left in the empty suit. Briskly he moved about the cabin collecting his treasures. The amplifier helmet, universal symbol of power and of royalty, which had once belonged to his grandfather. It was a light but bulky instrument which could amplify the thrint's native ability to control twenty to thirty non-thrints into the ability to control an entire planet. His brother's farewell present, a disintegrator with a tailor-carved handle. He had a thought which made him put it aside. His statues of Ptul and Myxylomat. May they never meet! But both females would be dead before he saw them again, unless some friend put them in stasis against his return. His diamond-geared, hullfab cased watch with the cryogenic gears, which always ran slow no matter how many times it was fixed. He couldn't wear it to F124; it was for formal events only. He wrapped each valuable in one of his extra robes before inserting it into the suit.

There was some room left over.

In a what-the-hell mood he called the little racarliw slave over from the storage locker and made it get in. Then he screwed the helmet down and pushed the panic button.

The suit looked like a crazy-mirror. All the wrinkles remained, but the suit was suddenly more rigid than diamond or hullfab. He propped it in a corner, patted it fondly on the head, and left it.

"Cancel present course to F124," he typed. "Compute and follow

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

fastest course to F124 using only half of remaining power, completing all necessary course corrections within the next day."

A day later, Kzanol was suffering mild gnal withdrawal symptoms. He was doing everything he could think of to keep himself busy so that he wouldn't have to think about how much he wanted a gnal.

He had, in fact, just finished an experiment. He had turned off the field on the second suit, placed the disintegrator in the grip of its glove, and turned on the field again. The field had followed its metal surface. The gun had gone into stasis along with the suit.

Then the power went off. Feeling considerable relief, Kzanol went to the board and typed, "Compute fastest course to eighth planet of F124 system. Wait ½ day, then follow course." He put on his suit, picked up the disintegrator and some wire line, and went out the airlock. He used the line to stop his drift until he was motionless with respect to the ship.

Any last thoughts?

He'd done the best he could for himself. He was falling toward F124. The ship would reach the unwatched, uninhabitable eighth planet before Kzanol hit the third. It should make a nice big crater, easy to find. Not that he'd need it.

There was a risk, he thought, that the rescue switch might be set off by reentry heat. If that happened he would wake up underground, for it took time for the field to die. But he could dig his way out with the disintegrator.

Kzanol poised a thick, clumsy finger over the panic button. Last thoughts?

Kzanol pushed the panic button.

II

Larry Greenberg climbed out of the contact field in the big dolphin tank room and stood up. There were no disorientation effects this time, no trouble with his breathing and no urge to wiggle his tail. Which was natural enough, since the 'message' had gone the other way.

The dolphin named Charley was lying on the bottom of the tank. Larry walked around to where Charley could see him through the glass, but Charley's eyes weren't looking at anything. The dolphin was twitching all over. Larry watched with concern, aware that the two marine biologists had come up beside him and were looking just as worried. Then Charley stopped twitching and surfaced.

"That wasss wild," said Charley in his best Donald Duck accent.

"Are you all right?" one of the seadocs asked anxiously. "We had it at lowest power."

"Sssure, Billl, I'm fine. But that was wild. I feel like I should have arms and legs and a long nose over-hanging my teeth instead of a hole in my head." Whatever accent Charley had, there was nothing wrong with his vocabulary. "And I havvv this terrible urge to make love to Larry's wife."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Me too," said Bill Slater, but under his breath.

Larry laughed. "Don't you dare, you lecherous fish! I'll steal your cows!"

"We trade wives?" Charley buzzed like an MG taking off, then flipped wildly around the tank. Dolphin laughter. He ended the performance by jetting straight out of the water and landing on his belly. "Has my accent improved?"

Larry decided there was no point in trying to brush off the water. It had already soaked through to his skin. "Come to think of it, yes, it has. It's much better."

"Good. When do we have our next session?"

Larry was busy squeezing water out of his hair. "I don't know, exactly, Charley. Probably a few weeks. I've been asked to take on another assignment. You'll have time to talk to your colleagues, pass on whatever you've learned about us walkers by reading my mind."

"Butt—"

"Sorry, Charley. Duty calls. Dr. Jansky made it sound like the opportunity of the decade. Now roll over."

"Tyrant!" hissed Charley, but he rolled over on his back. The three men spent a few minutes rubbing his belly. Then Larry had to leave. Momentarily he wondered if Charley would have any trouble assimilating his memories. But there was no danger; at the low contact power they had been using, Charley could choose to forget the whole experience if he had to.

That night he and Judy had dinner with Dr. and Mrs. Jansky. Dr. Dorcas Jansky was a huge West Berliner with a blond beard and the kind of flamboyant, extrovert personality that always made Larry slightly uncomfortable. Had he but known it, Larry had a very similar psyche; but it was housed in a much smaller body. It looked different that way. Mrs. Jansky was about Judy's size and almost as pretty. She was the quiet type, at least when English was being spoken.

The conversation ranged explosively during dinner. They compared Los Angeles' outward growth to West Berlin's reaching skyscrapers.

"The urge to reach the stars," said Jansky.

"No room to expand; you're surrounded by East Germany," Larry maintained. They spent useless time deciding which of the eleven forms of communism most closely resembled Marxism, and finally decided to wait and see which government withered away the fastest. They talked smog — where did it come from, now that there were neither industrial concerns nor hydrocarbon-powered vehicles in the Major Los Angeles Basin? Mainly cooking, thought Judy. Cigarettes, thought Jansky, and Larry suggested that electrostatic air conditioning concentrated the impurities in the outside air. They talked about dolphins. Jansky had the nerve to question dolphin intelligence, and Larry took it personally, stood up and gave the most stirring impromptu lecture of his life. It

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

wasn't until the coffee hour that business was mentioned.

"You were not the first man to read a dolphin's mind, Mr. Greenberg." Jansky now held a gigantic cigar as if it were a professor's blackboard pointer. "Am I right in thinking that the dolphin contacts were only training of a sort?"

Larry nodded vigorously. "Right. Judy and I were trying for a berth on the *Lazy Eight III*, for Jinx. I knew from the standard tests that I had some telepathic talent, and when we got the word about the bandersnatchi I knew we were in. They've gotten nowhere trying to learn the bandersnatchi language, if there is one, and there aren't any contact men among them. So I volunteered for the dolphin work and Judy started studying linguistics, and then we both put in for the trip. I thought our sizes would be the clincher. The dolphin work was just practice for reading a bandersnatch." He sighed. "But this fool economic war with the Belt is fouling up the whole space effort. The bastards."

Judy reached across and took his hand. "We'll get there yet," she promised.

"Sure we will," said Larry.

"You may not need to," said the doctor, emphasizing with jerky gestures of his cigar. "If the mountain will not come to Mahomet—" He paused expectantly.

"You don't mean you've got a bandersnatch here?" Judy sounded startled, and well she might. Bandersnatchi weighed thirty tons apiece.

"Am I a magician? No bandersnatchi, but something else. Did I explain that I am a physicist?"

"No." Larry wondered what a physicist would want with a contact man.

"Yes, a physicist. My colleagues and I have been working for some twelve years on a time-retarding field. We knew it was possible, the mathematics were well known, but the engineering techniques were very difficult. It took us years."

"But you got it."

"Yes. We developed a field that will make six hours of outer, normal time equivalent to one second of inner time. The ratio of outer time to inner time moves in large, ahh, quantum jumps. The 21,000-to-one ratio is all we have been able to get, and we don't know where the next quantum is."

Judy spoke unexpectedly.

"Then build two machines and put one inside the field of the other."

The physicist laughed uproariously. He seemed to shake the room. "Excuse me," he said when he had finished, "but it is very funny that you should make that suggestion so quickly. Of course it was one of the first things we tried." Judy thought black thoughts, and Larry squeezed her hand warningly. Jansky didn't notice. "The fact is that one time field cannot exist inside another time field. I have worked out a mathematical proof of this."

"Too bad," said Larry.

"Perhaps not. Mr. Greenberg, have you ever heard of the Sea Statue?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Larry tried to remember, but it was Judy who answered, "I have! *Life* did a pictorial on it. It's the one they found of the Brazilian continental shelf."

"That's right," Larry remembered aloud. "The dolphins found it and sold it to the United Nations for some undersea gadgetry. Some anthropologists thought they'd found Atlantis." He remembered pictures of a misshapen figure four feet tall, with strangely carved arms and legs and a humped back and a featureless globe of a head, surfaced like a highly polished mirror. "It looked like an early rendition of a goblin."

"Yes, it certainly does. I have it here."

"Here?"

"Here. The United Nations Comparative Culture Exhibit loaned it to us when we explained what it was for." He crushed his now tiny cigar butt to smithereens. "As you know, no sociologist has been able to link the statue to any culture. But I, the doctor of physics, I have solved the mystery. I believe.

"Tomorrow I will show you why I believe the statue is an alien being in a time-retarder field. You can guess what I want you to do. I want to put you and the statue in the time-retarder field, to cancel our, er, visitor's own field, and let you read its mind."

III

They walked down to the corner at ten the next morning, and Judy stayed while Larry pushed the call button and waited for the cab. About two minutes passed before a yellow-and-black checked flyer dropped to the corner.

Larry was getting in when he felt Judy grasping his upper arm. "What's wrong?" he asked, turning half around.

"I'm frightened," she said. She looked it. "Are you sure it's all right? You don't know anything about him at all!"

"Who, Jansky? Look—"

"The statue."

"Oh." He considered. "Look, I'm just going to quickly make a couple of points. All right?" She nodded. "One. The contact gadget isn't dangerous. I've been using it for years. All I get is another person's memories, and a little insight into how he thinks. Even then they're damp-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ed a little so I have to think hard to remember something that didn't happen to me personally.

"Two. My experience with dolphins has given me some experience with unhuman minds. Right?"

"Right. And you always want to play practical jokes after a session with Charley."

"Nuts. I've always liked practical jokes. Third point is that the time field doesn't matter at all. It's just to kill the field around the statue. You can forget it.

"Four. Jansky won't take any chances with my life. You know that, you can see it.

"Okay?"

She smiled and didn't mean it. "Okay. I thought you'd be practicing next on bandersnatchi, but I guess this is the acid test. And I'm still worried. You know I'm prescient."

"Well — oh, well. I'll call you as soon as I can." He got into the cab and dialed the address of the UCLA physics building.

"Mark will be back with the coffee in a minute," said Dorcas Jansky. "Let me show you how the time-retarding field works." They were in a huge room whose roof contained two of those gigantic electrodes which produce ear splitting claps of artificial lightning to impress groups of wide-eyed college students. But Jansky didn't seem to be concerned with the lightning maker. "We borrowed this building because it had a good power source," he said, "and it was big enough for our purposes. Do you see that wire construction?"

"Sure." It was a cube of very fine wire, with a flap in one side. The wire covered the top and floor as well as the sides. Busy workmen were testing and arranging great and complex-looking masses of machinery, which were not as yet connected to the wire cage.

"The field follows the surface of that wire. The wire is the boundary between slow, inside time and fast, outside time. We had some fun making it, let me tell you!" He ran his fingers through his beard, meditating on the hard work to which he had been put. "We think the field around the alien is several quantum numbers higher than ours. There is no telling how long he has been in there — except by the method we will use."

"Well, he might not know either."

"Yes, I suppose so. Larry, you will be in the field for six hours of our time. That will be one second of your time. I understand that the thought transfer is instantaneous?"

"Not instantaneous, but it does take less than a second. Set things up and turn on the contact machine before you turn on the stasis field, and I'll get his thoughts as soon as he comes to life. Until he does that I won't get anything." Just like with the dolphins, Larry told himself. It's just like contacting a Tursiops truncatus.

"Good. I wasn't sure. Ahh." Jansky went to tell Mark where to put the coffee. Larry welcomed the interruption, for suddenly he was getting the willies. It wasn't

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

nearly as bad as it had been the night before his first session with a dolphin, but it was bad enough. He was remembering that his wife was sometimes uncomfortably psychic. He drank his coffee gratefully.

"So," Jansky gasped, having drained his cup at a few gulps. "Larry, when did you first suspect that you were telebaddic?"

"College," said Larry. "I was going to Washburn University, it's in Kansas, and one day a visiting bigwig gave the whole school a test for psi powers. We spent the whole day at it. Telepathy, esper, PK, prescience, even a weird test for teleportation which everybody flunked. Judy came up high on prescience, but erratic, and I topped everyone on telepathy. That's how we met. When we found out we both wanted to go star-hopping..."

"Surely that wasn't why you two married?"

"Not entirely. And it sure as hell isn't the reason we haven't gotten divorced." Larry grinned a feral grin, then seemed to recollect himself. "Telepathy makes for good marriages, you know."

"I wouldn't know," Jansky smiled.

"I might have made a good psychologist," Larry said without regret. "But it's a little late to start now. I *hope* they send out the *Lazy Eight III*," he said between his teeth. "They can't desert the colonies anyway. They can't do that."

Jansky refilled both cups. The workmen wheeled something in the huge doorway, something covered by a sheet. Larry watched them as he drank the coffee. He was feeling completely relaxed. Jansky drained his second cup as fast as he had finished the first. He must either love it, Larry decided, or hate it.

Unexpectedly Jansky asked, "Do you like dolphins?"

"Sure. Very much, in fact."

"Why?"

"They have so much fun," was Larry's inadequate-sounding reply.

"You're glad you entered your profession?"

"Oh, very. It would have surprised my father, though. He thought I was going to be a pawnbroker. You see, I was born..." His voice trailed off. "Hey! Is that it?"

"Um?" Jansky looked where Larry was looking. "Yes, that is the Sea Statue. Shall we go and look at it?"

"Let's." They got up.

The three men carrying the statue took no notice of them. They carried it into the cubical structure of fine wire mesh and set it under one of the crystal-iron helmets of the contact machine. They had to brace its feet with chocks of wood. The other helmet, Larry's end of the contact link, was fixed at the head of an old psychoanalyst's couch. The workmen left the cage, single file, and Larry stood in the open flap and peered at the statue.

The surface was an unbroken, perfect mirror. A crazy mirror. It made the statue difficult to see, for all that reached the eye was a dis-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

torted view of other parts of the room.

The statue was less than four feet tall. It looked very much like a faceless hobgoblin. The triangular hump on its back was more stylized than realistic, and the featureless globular head was downright eery. The legs were strange and bent, and the heels stuck out too far behind the ankle. It could have been an attempt to model a gnome, except for the strange legs and feet and the stranger surface and the short, thick arms with massive Mickey Mouse hands.

"I notice he's armed," was Larry's first, slightly uneasy comment. "And he seems to be crouching."

"Crouching? Take a closer look," Jansky invited genially. "And look at the feet."

A closer look was worse. The crouch was menacing, predatory, as if the supposed alien was about to charge an enemy or a food animal. The gun, a ringed double-barreled shotgun with no handle, was ready to deal death. But—

"I still don't see what you're driving at, but I can see his feet aren't straight. They don't lie flat to the ground."

"Right!" Jansky waxed enthusiastic. His accent thickened noticeably. "That was the first thing I thought of, when I saw a picture of the statue in the Griffith Park Observatory. I thought, the thing wasn't made to stand up. Why? Then I saw. He is in free flight!"

"Yeah!" It was startling, how obvious the thing became. The statue was in a weightless spaceman's crouch, halfway toward foetal position. Of course he was!

"That was when the archeologists were still wondering how the artist had gotten that mirror finish. Some of them already thought the statue had been left by visitors from space. But I had already completed my time field you see, and I thought, suppose he was in space and something went wrong. He might have put himself in slow time to wait for rescue. And rescue never came. So I went to Brasilia and persuaded the UNCCE to let me test my t'eory. I aimed a liddle laser beam at one finger...

"And what happened? The laser couldn't even mark the surface. Then they were convinced. I took it back here with me." He beamed happily.

The statue had seemed formidable, armed and crouched and ready to spring. Now it was merely pitiful. Larry asked, "Can't you bring him out of it?"

Jansky shook his head violently. "No. You see that unshiny bump on his back?"

Larry saw it, just below the apex of the triangular hump. It was just around it, and faintly red.

"It sticks out of the field, just a little. Just a few molecules. I think it was the switch to turn off the field. It may have burned off when our friend came through the air, or it may have rusted away while he was at the bottom of the ocean. So now there is no way to turn it off. Poor designing."

"Well, I think they are ready."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Larry's uneasiness returned. They *were* ready. Machinery hummed and glowed outside the cage. The dials were steady on the humped contact machine, from which two thick multicolored cables led to the helmets. Four workmen in lab smocks stood nearby, not working but not idling. Waiting.

Larry walked rapidly back to the table, poured and drained half a cup of coffee, and went back into the cage. "I'm ready too," he announced.

Jansky smiled. "Okay," he said, and stepped out of the cage. Two workmen immediately closed the flap with a zipper twenty feet long.

"Give me two minutes to relax," Larry called.

"Okay," said Jansky.

Larry stretched out on the couch, his head and shoulders inside the metal shell which was his contact helmet, and closed his eyes. Was Jansky wondering why he wanted extra time? Let him wonder. The contact worked better when he was resting.

Two minutes and one second from now, what wonders would he remember?

Judy Greenberg finished programming the house and left. Larry wouldn't be back until late tonight, if then; various people would be quizzing him. They would want to know how he took the 'contact'. There were things she could do in the meantime.

The traffic was amazing. In Los Angeles, as in any other big city, the taxis were each assigned to a certain altitude. They took off straight up and landed straight down, and the coordinator took care of things when two taxis had the same destination. But here, taxi levels must have been no more than ten feet apart. In the three years they had been living here she had never gotten used to seeing a cab pass that close overhead. The traffic was faster in Kansas but at least it was set to keep its distance.

She noticed the city's widely advertised cleanup project at work on many of the black-sided buildings.

The stone came away startlingly white where the decades, sometimes centuries, of dirt had washed off. She noted with amusement that only corner buildings were being cleaned.

She was about to enter a women's leather goods store when it happened. In the back of her mind something slowed, then disappeared. Involuntarily Judy stopped walking. The traffic around her seemed to move with bewildering speed. The cars were blurred motion, pedestrians shot by on twinkling feet or were hurled at suicidal velocities by the slidewalks. She had known something was coming, but she had never imagined it would feel like this.

Judy went into the shop and began searching for gifts. She was determined not to let this throw her. In six hours he would be back.

"Suei minuten," Doctor Jansky muttered, and threw the switch.

There was a complaining whine from the machinery, rising in pitch

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and amplitude, higher and louder until even Jansky blinked uncomfortably. Then it cut off, sharply and suddenly. The cage was an unbroken mirror.

The timing mechanism was inside the cage. It would cut the current in 'one second'.

"It is thirteen twenty," said Jansky. "I suggest we should be back here at nineteen hours." He left the room without looking back.

Kzanol dropped the wire and pushed the button on his chest. The field must have taken a moment to reach its peak, for the universe was suddenly jagged with flying streaks of light.

Gravity snatched at him. If there were other changes in his personal universe he missed them. All he knew was the floor beneath him, and the block of something beneath each heel-spur, and the weight which yanked him down. There was no time to tense his legs or catch his balance. He bleated and threw both arms out to break his fall.

IV

Jansky was the last to arrive. He came promptly at nineteen hours, pushing a keg of beer on a cart. Someone took it from him and wheeled it over to a table. His image wavered as he passed the cube; the wire wall couldn't have been quite flat.

Another man was in the building, a dumpy man about forty years old, with a blond Mohican haircut. When Jansky was rid of the keg he came forward to introduce himself. "I'm Dr. Dale Snyder, Mr. Greenberg's experimental psychologist. I'll want to talk to him when he gets out of there, make sure he's all right." Jansky shook hands and offered Snyder a fair share of the beer. At Snyder's insistence he spent some time explaining what he hoped to accomplish.

At nineteen twenty the cage remained solid. "There may be a little delay," said Jansky. "The field takes a few minutes to die. Sometimes longer."

At nineteen thirty he said, "I hope the alien time field hasn't reinforced mine." He said it softly, in German.

At nineteen fifty the beer was almost gone. Dale Snyder was mak-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ing threatening noises, and one of the technicians was soothing him. Jansky, not a diplomat, sat staring fixedly at the silvered cube. At long intervals he would remember the beer in his paper cup and pour it whole down his throat. His look was not reassuring.

At twenty hours the cube flickered and was transparent. There was a cheer as Jansky and Snyder hurried forward. As he got closer Jansky saw that the statue had fallen forward, and was no longer under the contact helmet.

Snyder frowned. Jansky had done a good job of describing the experiment. Now he wondered: Was that sphere really where the alien kept its brain? If it wasn't, the experiment would be a failure. Even dolphins were deceptive that way. The brain was not in the bulging 'forehead'; but behind the blowhole.

Larry Greenberg was sitting up. Even from here he looked bad. His eyes were glassy, unfocused; he made no move to stand up. He looks mad, thought Dorcas Jansky, hoping that Snyder wouldn't think so. But Snyder was obviously worried.

Larry climbed to his feet with a peculiar rolling motion. He seemed to stumble, recovered, tottered to the edge of the wire curtain. He looked like he was walking on raw eggs, trying not to break them. He stooped like a weight lifter, bending his knees and not his back, and picked up something from where it lay beside the fallen statue. As Jansky reached the wire Larry turned to him with the thing in his hands.

Jansky screamed. He was blind! and the skin of his face was coming apart! He threw his arms over his face, feeling the same torment in his arms, and turned to run. Agony lashed his back. He ran until he hit the wall.

A moment earlier Judy had been sound asleep. Now she was wide awake, sitting straight up in bed, eyes searching the dark for — she didn't know what. She groped for the light switch, but it wasn't in the right place. Her swinging arm couldn't even find the bed control panel. Then she knew that she was on Larry's side of the bed. She turned on the lamp.

Where was he? She'd gone to sleep about eighteen, completely beat. . . . He must still be at UCLA. Something had gone wrong, she could feel it!

Was it just a nightmare?

If it had been a nightmare she couldn't remember a single detail. But the mood clung, haunting her. She tried to go back to sleep and seemed strange and awful. The shadows were full of unseen crawling monsters.

Kzanol bleated and threw his arms out to break his fall.

And went insane. The impressions poured riotously through his flinching senses and overwhelmed him. With the desperation of a drowning man trying to breath water, he tried to sort them out before they killed him.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

First and most monstrous were the memories of an unfamiliar breed of slave calling itself Larry Greenberg.

They were more powerful than anything that had ever reached his Power sense. If Kzanol had not spent so many years controlling alien life forms, growing used to the feel of alien thoughts, his whole personality would have been drowned.

With a tremendous effort he managed to exclude most of the Greenberg mind from his consciousness. The vertigo didn't pass. Now his body felt weird, hot and malformed. He tried to open his eye; the muscles wouldn't work. Then he must have hit the right combination and his eye opened. Twice! He moaned and shut it tight, then tried again. His eye opened twice, two distinct and separate motions, but he kept them open because he was looking down at his own body.

His body was Larry Greenberg!

He'd had enough warning. The shock didn't kill him.

Gingerly Kzanol began to probe the Greenberg mind. He had to be careful to get only a little information at a time, or he would be swamped. It was very different from ordinary use of the Power; it was a little like practicing with an amplifier helmet.

He got enough to convince him that he really had been teleported — or telepathed, or some ptavv-sired thing — into an alien slave body.

He sat up slowly and carefully, using the Greenberg reflexes as much as he dared because he wasn't used to the strange muscles. The two-eyed vision tended to confuse him, but he could see that he was in a sort of metal mesh enclosure. Outside . . . Kzanol got the worst shock of all, and again he went insane.

Outside the enclosure were slaves, of the same strange breed as his present self. Two of them were actually coming toward him. He hadn't sensed them at all — and he still couldn't.

Powerless!

A thrint is not born with the Power. Generally it takes around two thrintun years for the Power sense to develop, and another year before the young thrint can force a coherent order on a slave. In some cases the Power never comes. If a thrint reaches adulthood without the Power, he is called a ptavv. He is tattooed permanently pink and sold as a slave, unless he is secretly killed by his family. Very secret. There is no better ground for blackmail than the knowledge that a wealthy or prominent family had once produced a ptavv.

An adult thrint who loses his Power is less predictable. If he doesn't go thrint-catatonic he may commit suicide; or he may go on a killing spree, slaughtering either every slave or every thrint that crosses his path; or he may compulsively forget even the existence of a Power. The Powerloss is more crippling than going blind or deaf, more humiliating than castration.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

If a man could lose his intelligence, yet retain the memory of what he had lost, he might feel as Kzanol felt; for the Power is what separates Thrint from animal.

Still daring to hope, Kzanol looked directly at the nearest alien and ordered it to *STOP!* The sense wasn't working, but maybe . . . The slaves kept coming.

They were looking at him! Helplessly he cast about for some way to stop them from looking. They were witnessing his shame. these animals, these undersized white-foods who now considered him an equal! And he saw the disintegrator, lying near the abandoned Kzanol body's outflung hand.

He got to his feet all right, but when he tried to hop he almost fell on his face. He managed to walk over, looking like a terrified novice trying to move in low gravity. The nearest slave had reached the cage. Kzanol bent his funny knees until he could pick up the disintegrator, using both hands because his new fingers looked so fragile and delicate and helpless. With a growl that somehow got stuck in his throat, he turned the digging instrument on the aliens. When they were all cowering on the floor or against the walls he whirled and ran, smashed into the wire, backed off and disintegrated a hole for himself and ran for the door.

He had to let the Greenberg mind through to open the door for him.

For a long time he thought only of running.

There were green lights below, spaced sparsely over the land between the cities. You had to fly high to see two lights at a time.

Between cities most cars did fly that high, especially if the driver was the cautious type. The lights were service stations. Usually a car didn't need servicing more than twice a year, but it was nice to be able to see help when you were in open country. The loneliness could get fierce.

It was also nice to know you could land near a green light without finding yourself on top of a tree or halfway over a cliff.

Kzanol, in the body of the Earthman, Greenberg, steered very wide of the cities. He avoided the green lights too. He couldn't have faced a slave in his present shape. When he left the physics building he had gone straight to the haven of his Volkswagen, clutching his disintegrator, and gone straight up. Then he had faced the problem of destination. He didn't really want to go anywhere. When he reached altitude he set the car for New York, knowing that he could change back to California before he got there. Henceforth he let the car drive itself, except when he had to steer around a city.

At one hours he had to bring the car down.

The drive had been grueling. Only his mad urge to flee had kept him going; and he was beginning to know that he had nowhere to flee to. He felt aches and pains that were sheer torture to him, although Greenberg would have ig-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

nored them from habit. His fingers were cramped and sore; they seemed more delicate than ever. He was not mistaken in this. The Greenberg memory told him why the little finger of his left hand ached constantly: a baseball accident that had healed wrong. And Greenberg had taken this injury for granted! Kzanol was almost afraid to use his hands for anything. There were other pains. His cramped muscles ached from sitting in one position for five hours. His right leg was in agony from its constant pressure on the throttle during override maneuvers. He itched everywhere that clothing pressed against his body.

He brought the car down in the middle of a stunted wood in Arizona. Hurriedly he got out and stripped the clothes off the body he was occupying. *Much* better! He tossed them into the right-hand seat — he might need them again sometime — got back in and turned on the heater. Now he itched where he touched the seat, but he could stand it.

He had been letting Greenberg's reflexes drive the car, and in the process had gotten used to the presence of Greenberg in his mind. He could draw on the memory set with little discomfort and without fear. But he had not become used to the alien body he now wore, and he had no slightest intention of adjusting to the loss of the Power. He had to get his body back.

He knew where it was: he'd seen it when he got the disintegrator. The Greenberg memories filled in the details for him. Obviously he had thrown the disintegrator when he put out his arms to protect himself. The body would keep until he found some way of getting back to it.

To do that he would need a way to operate the men who operated the contact machine. He would need a great deal of technological help to break the Kzanol body out of stasis; he'd seen, as Greenberg, the rusted spot on his back. But to get all this help he needed the Power. How? His human brain didn't have the Power in it.

But he did have one chance. Humans had space travel, remembered Kzanol/Greenberg. Pitiful space travel: ships that took decades to cross between the inhabited worlds, and days even to cruise the planets of the 'solar system'. But space travel it was.

If he could find the F124 system, and if it were close enough to reach, he could get the amplifier helmet. And Greenberg had had rudimentary telepathy.

The helmet could boost his tiny talent into a semblance of thrintun Power.

Where was he now? He must have missed F124, Kzanol decided, and gone on to a haphazard collision with this planet Earth. Where and when had he landed? Could he reach the lost planet within Greenberg's lifetime?

Greenberg's body wanted dinner (it was 1:20 hours), water, and a cigarette. Kzanol had no difficulty in ignoring the hunger and thirst, for a thrint would kill himself if

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

he ate enough to satisfy his hunger, and rupture his storage sac if he drank until he wasn't thirsty. The battle for food had been very fierce among the thrint's dumb ancestors. But he had cigarettes. He smoked and found he liked it, although he had to fight an urge to chew it.

Where was he? He let Larry Greenberg's memory come to the surface. High school. History class, with lousy grades. The race for space; Moon colonies; Mars colonies. The Belt. The economics behind the Belt. Overpopulation on Earth. Sanction against the Belt, during an argument over the use of the Jovian moons. There was a lot of extraneous material coming through, but Kzanol was getting a good picture of the solar system. He was on the third planet, and it was binary; he had been extremely lucky to hit it.

The U. N. power sender on Mercury. Failure of the economic sanction. Industrial warfare. Why was the Belt being treated as a villain? Forget it. Belt mining of Saturn's rings for water. Saturn's rings. Rings!

"Youch!" Kzanol hurled the cigarette butt away and stuffed his burnt fingers in his mouth.

F124. So this *is* F124, he thought. It doesn't *look like F124.* He started to shiver, so he turned up the heater.

V

At one-thirty Judy got up and went out. The nightmare feeling had become too much to bear, alone in the dark. And Larry hadn't called.

A cab dropped to the corner in answer to her ring. She didn't know the address of the UCLA Physics Building, but there was a phone in the cab. She had Information type the address on the cab destination board. The cab whirred and rose.

Judy leaned back into the soft seat. She was tired, even though she couldn't sleep.

The building was blazing with light. She could see that before the cab started down.

As it got closer she noticed other details.

The big square vehicle was an ambulance, one with large capacity. Those little cars with the extended motor housings were police. There were tiny figures moving around...

Automatically Kzanol lit his last cigarette. His mouth and throat were raw; was that normal? He remembered that it wasn't, except when he had been smoking far too much.

. . . And then the Time of Ripening would come. Suddenly everyone would be in a hurry; Dad and Granpa would return to the house very late and bone-tired, and the slaves never rested at all. All day and night there was the sound of trees being felled, and the low whirr of the stripping plant.

Before he was old enough to help, he used to watch the trees go into the stripping plant. They would go in looking like any other mpul tree: perfectly straight, with

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the giant green flower at the top, and the dark blue stalk ending in a tapering tap root. In the stripping plant the flower and the soft bark and the tap root would be removed. The logs would come out shining in the sun, with nothing left but the solid fuel rocket core and the thin steel-crystal skin beneath the bark. Then the logs would be shipped to all the nearby civilized worlds, in ships which lifted on other stage tree logs.

But first there was the testing. A log was selected at random and fitted into the testing block. Grandfather and Dad would be standing by, each looking like he had sucked a soured gnal. They watched with single-minded concentration as the log was fired, ready to disapprove a whole crop at the slightest sign of misfire. Kzanol used to try to imitate their expressions. The little tnuctip technicians would be running around setting instruments and looking harried and important. They seemed too small to be intelligent animals, but they were. Their quaint biological science had mutated the stage trees out of useless mpul trees, and created the sunflowers which guarded the house and the gigantic, mindless yeast-eating whitefoods which fed the family and the carnivorous tnuctipun themselves. They had been given more freedom than any other slave race, because they had proven the worth of their free-thinking brains.

A tnuctip would set off the log. The flame would shoot out over the valley, blue-white and very straight, darkening at the end to red smoke, while instruments measured the log's precise thrust and Grandfather smiled in satisfaction. The flame shook the world with its sound, so that little Kzanol used to fear that the thrust was increasing the planet's rotation . . .

Kzanol/Greenberg reached to knock the ash off his last cigarette and saw his second-to-last burning in the ash tray, two-thirds smoked. He hadn't done that since high school! He cursed a thrintun curse and almost strangled on it; his throat positively wasn't built for overtalk.

He wasn't gaining anything with his reminiscing, either.

Wherever in the universe he was, he still had to reach a spaceport. He needed the amplifier. Later he could figure out why there were aliens on F124, and why they thought they had been here longer than was possible. He started the motor and punched for Topeka, Kansas.

He'd have to steal a ship anyway. It might as well be an armed ship (since this region of space was lawless by definition, having no thrintun), and there was a military spaceport near Topeka.

Wait a moment, he thought. This couldn't be F124. There were too many planets! F124 had only eight, and here there were nine. Now that he had started he noticed other discrepancies. The asteroid belt of F124 had been far thicker, and her moon had had a slight rotation, he remembered. He was in the wrong system!

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Merely a coincidence! Kzanol grinned. And what a coincidence? The habitable planet, the ringed planet, the ordered sizes of the worlds... come to think of it, he was the only thrint ever to have found two slave planets. He would be the richest being in the galaxy! He didn't care, now, if he never found the map.

But of course he still needed the amplifier.

Judy felt that she was on the verge of a tantrum. "But can't they talk at all?" she begged, knowing she was being unreasonable.

Lloyd Masney's patience was wearing thin. "Mrs. Greenberg," he said heavily. "You know that Doctor Jansky is having his eyes and face replaced at this moment. Also a wide patch of skin on his back, which was taken of almost down to the spinal cord. The others are almost as badly off. Dr. Snyder has no eye damage, but the part of his face that he didn't cover with his hands is being replaced, and the palms, of his hands, and some skin from his back. Knudsen *did* have his spinal cord opened, and some ribs too. The autodoc won't let us wake any of them up, even under police priority, except for Mr. Trimonti. He is being questioned while the 'doc replaces skull and scalp from the back of his head. He has had a bad shock, and he is under local anesthetic, and you may not disturb him! You may hear the transcription of our interview when we have it. Meanwhile, may I offer you some coffee?"

"Yes, thank you," said Judy. She thought he was giving her a chance to get a grip on herself, and was grateful. When he came back with the coffee she sipped it for a few moments, covertly studying the police lieutenant.

He was a burly man who walked like he had bad feet. No wonder if he did; his hands and feet were both tiny in proportion to the rest of his body. He had straight white hair and a dark complexion. His bushy mustache was also white. He seemed almost as impatient as she. She had not yet seen him sitting normal fashion; now his legs were draped over one arm of his swivel chair while his shoulders rested against the other.

"Have you any idea where he is now?" She couldn't restrain herself.

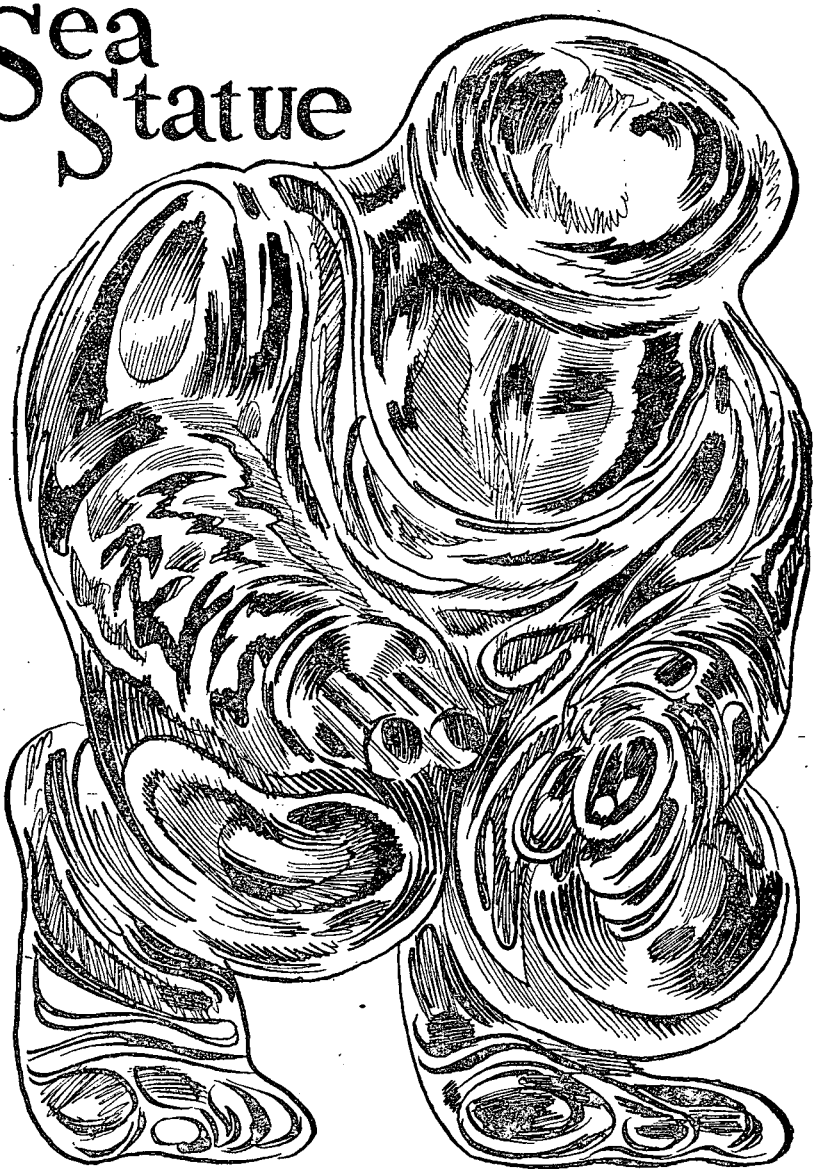
"Sure," said Masney unexpectedly. "He just crossed the Kansas-Colorado border at a height of nine thousand feet. I guess he doesn't know how to short out his license sender. But then, maybe he just didn't bother."

"Maybe he just doesn't like cities," said the old man in the corner. Judy had thought he was asleep. He had been introduced as Lucas Garner, an Arm of the U. N. Judy waited for him to go on, but he seemed to think he had explained himself. Masney explained for him.

"You see, we don't advertise the fact that all our override beamers are in the cities. I figure that if he knows enough to go around the cities, which he's been doing, he must know enough to short out his

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Sea Statue



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

license so that we can't follow him. Luke, have you got some reason to think he doesn't like cities?"

Luke nodded. Judy thought he looked like the oldest man in the world. His face was as wrinkled as Satan's. He rode a ground-effect travel chair as powerful as a personal tank. "I've been expecting something like this for years. Lloyd, do you remember when the Fertility Laws went into force and I told you that a lot of homicidal nuts would start killing bachelors who passed the Fertility Board? And it happened. This is like that. I thought it might happen on Jinx, but it happened here.

"Larry Greenberg thinks he's an alien."

"But he's done this before," Judy protested.

"No." Garner drew a lit cigarette out of the arm of his chair. "He hasn't. He's worked with men and dolphins. Now he's run into something he can't take. I've got a good guess what it is, and I'd give my wheel chair—" Judy looked, but it didn't have wheels — "to know if I'm right.

"Mrs. Greenberg. Has your husband ever been asked to read the mind of another professional telepath?"

VI

Kzanol dropped the car again half an hour later. He had been wondering about the peculiar feeling in his eyes, and when he felt he was about to lose consciousness he became frightened. Then his Greenberg memories told him what it was. He was sleepy.

He didn't even waste time worrying about it. Kzanol was getting used to the humiliations that came with Greenberg's body. He put the car down on a plowed field and slept.

He woke at first light and took the car up at once. And then, incredibly, he began to enjoy himself. Towns and cities appeared before the speeding car, and he circled them cautiously; but the countryside began to attract his attention. The fields of grain and alfalfa were strange in their small size and checkerboard design. There was other vegetation, and he dropped low to examine the trees. Trees with shapeless wooly green heads instead of flowers. Trees that sometimes hugged the ground as if fearing the sky. Perhaps the winds were dangerous on this world. Trees that almost never grew completely straight. They were weird and beautiful, and the Greenberg memory could tell him little about them; Greenberg was a city man. He curved out of his way to see them. He dipped low over quaint houses with peaked roofs, delighted by their novel architecture, and he wondered again about Earth's weather. Greenberg, jogged this time, remembered a Kansas tornado. Kzanol was impressed.

Kzanol was as happy as a tourist. True, he was even more uncomfortable, for he was hungry and thirsty and in need of nicotine or gnals. But he could ignore these minor discomforts; he was a thrint,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

he knew that a gnal would be deadly poison, and it had been Greenberg's fixed belief that he could stop smoking whenever he pleased. Kzanol believed him and ignored the craving. Normally he would trust anything he found in the Greenberg memory.

So he gawked at the scenery like any tourist doing something new.

After two hours it began to pall. The problem of where in space he was was worrying him again. But he saw the solution already. The Topeka Public Library was the place to go. If a nearby solar system had been found which was nearly identical to this one, he would find it listed there. The space telescopes, unhampered by atmospheric distortion, were able to see planets circling other suns; and the interstellar ramscoop robots had been searching out man-habitable systems for nearly a century. If the F124 system had not been found, it was beyond the reach of terran ships, and he might as well give up.

Amazing, how nearly alike were the F124 system and the solar system. There were the two habitable binary thirds, the giant fifths, the asteroid belts, similar in position if not in density, the correspondence of size and position of the first eight planets in each system, the ringed sixth — it was almost too much to believe.

Oh, Powerloss! Kzanol/Greenberg sighed and cracked his knuckles, badly frightening himself. It *was* too much to believe. He didn't believe it.

Suddenly he was very tired. Trintun was very far away in an unknown direction. The amplifier helmet, and everything else he owned, were probably equally unreachable in a completely different direction. His Power was gone, and even his body had been stolen by some terrifying slave magic. But worst of all, he had no idea what to do next!

A city rose in the distance. His car was making straight for it. He was about to steer around it when he realized it must be Topeka. So he put his head in his arms and wished he could lose consciousness again. The strength seemed to have leaked out of him.

This had to be F124.

But it couldn't be. The system had an extra world and not enough asteroids.

But, he remembered from the captive Greenberg mind, Pluto was supposed to be a stowaway in the solar system. There was its queer orbit, and some mathematical discrepancy in its size. Perhaps it was captured by Sol before he awakened.

But in three hundred years? Highly unlikely.

Kzanol raised his face, and his face showed fright. He knew perfectly well that three hundred years was his lower limit; the brain board had given him a three hundred year journey using half the ship's power. He might have been buried much longer than that.

Suppose he accepted Pluto. What about the slave race, happily living where there should have been only

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

yeast, or at most whitefoods, big as brontosaurs and twice as pretty, wandering along the shorelines feeding on mutated scum?

He couldn't explain it, so he dropped it.

But the asteroid belt was certainly thinner than it had been. True, it would have thinned out anyway in time, what with photon pressure and solar wind pushing dust and the smaller particles outward into deep space, and collisions with the bigger planets removing a few rocks, and even some of the most eccentric asteroids being slowed and killed by friction with the solar atmosphere — which must extend well past Earth. But that was not a matter for a few hundred years. Or even thousands. Or hundreds of —

And then he knew.

Not hundreds of years, or hundreds of thousands. He had been at the bottom of the sea while the solar system captured a new planet, and lost a good third of its asteroid belt; while F124's moon moved outward and stopped rotating altogether; while oceans of food yeast mutated and went bad, and mutated again, and again. At the bottom of the sea he had waited while yeast became grass and fish and now walked on two legs like a thrint.

A billion years wouldn't be long enough. Two billion might do it.

He was hugging his knees with both arms, almost as if he were trying to bury his head between them. A thrint couldn't have done that. It was not the pure passage of time which frightened him so. It was the loss of everything he knew and loved, even his own race. Not only Thrintun the world, but also Thrint the species, must be lost in the past. If there had been thrintun in the galaxy they would have colonized Earth long ages ago.

He was the last thrint.

Slowly he raised his head, to stare, expressionless, at the wide city beneath him.

He could dam' well behave like a thrint!

The car had stopped. He must be over the center of Topeka. But which way was the spaceport? And how would he get in? Greenberg, worse luck, had never had experience stealing spaceships. Well, first find out where it was, and then . . .

The ship was vibrating. He could feel it with those ridiculously delicate fingertips. There was sound too, too high to hear, but he could feel it jangling in his nerves. What was going on?

He went to sleep. The car hung for a moment longer, then started down.

"They always stack me in the rear of the plane," Garner grumbled.

Lloyd Masney was unsympathetic. "You're lucky they don't make you ride in the baggage compartment — seeing as you refuse to leave that hot-rod there alone."

"Well, why not? I'm a cripple!"

"Uh-huh. Aren't the Ch'ien treatments working?"

"Well, yes, in a manner of speaking. My spinal cord is carrying mes-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sages again. But walking ten paces around a room twice a day just about kills me. It'll be another year before I can walk downtown and back. Meanwhile my chair rides with me, not in the luggage compartment. I'm used to it."

"You'll never miss that year," Masney told him. "How old are you now, Luke?"

"Hundred and seventy next April. But the years aren't getting any shorter, Lloyd, contrary to public opinion. Why do they have to stack me in the rear? I get nervous when I see the wings turn red-hot."

Judy Greenberg came back from the rest room and sat down next to Lloyd. Lucas was across the aisle, in the space made by removing two chairs before takeoff. Judy seemed to have recovered nicely; she looked and moved as if she had just left a beauty parlor. From a distance her face was calm. Garner could see the slight tension in the muscles around the eyes, in the cheeks, through the neck. But Garner was very old. He had his own, non-psychic way of reading minds. He said, as if to empty air, "We'll be landing in half an hour. Greenberg will be sleeping peacefully until we get there."

"Good," said Judy. She leaned forward and turned on the threevee screen in the seat ahead.

VII

Kzanol felt a brand new and horribly unpleasant sensation, and woke up sputtering. It was the scent of ammonia in his nostrils. He woke up sputtering and gagging and bent on mass murder. The first slave he saw, he ordered to kill itself in a horrible manner.

The slave smiled tremulously at him. "Darling, are you all right?" Her voice was terribly strained and her smile was a lie.

Everything came back in a rush. That was Judy.... "Sure, Beautiful, I'm fine. Would you step outside while these good people ask me questions?"

"Yes, Larry." She stood up and left, hurrying. Kzanol waited until the door was closed before he turned on the others.

"You." He faced the man in the travel chair. He must be in charge; he was obviously the oldest. "Why did you subject Judy to this?"

"I was hoping it would jog your memory back. Did it?"

"My memory is perfect. I even remember that Judy is a sentient female, and that the idea of my not being Larry Greenberg would be a considerable shock to her. That's why I sent her away."

"Good for you. Your females aren't sentient?"

"No. It must be strange to have a sentient mate." Kzanol dug momentarily into Greenberg's memories, smiled a dirty smile, then got back to the business at hand. "How did you bring me down?"

The old one shrugged. "Easy enough. We put you to sleep with a sonic, then took over your car's autopilot. The only risk was that you might have been on manual. By the way, I'm Garner. That's Masney."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Kzanol took the information without comment. He saw that Masney was a stocky man, so wide that he seemed much shorter than six feet two inches. His hair and eating tendrils were dead white. Masney was staring thoughtfully back at Kzanol. It was the kind of look a new biology student gives a preserved sheep's heart before he goes to work with the scalpel.

"Greenberg," he said, "Why'd you do it?"

Kzanol didn't answer.

"Jansky's lost both his eyes and his face. Knudsen will be a cripple for nearly a year; you cut his spinal cord. With this." He pulled the disintegrator out of a drawer. "Why? Did you think it would make you king of the world? That's stupid. It's only a hand weapon."

"It's not even that," said Kzanol. He found it easy to speak English. All he had to do was relax. "It's a digging or cutting tool, or a shaping instrument. Nothing more."

Masney stared. "Greenberg," he whispered, as if he were afraid of the answer, "who do you think you are?"

Kzanol tried to tell him. He almost strangled doing it. Overtalk didn't fit human vocal cords. "Not Greenberg," he managed. "Not a — slave. Not human."

"Then what?"

He shook his head, rubbing his throat.

"Okay. How does this innocuous tool work?"

"You push that little button and the beam starts removing surface material."

"That's not what I meant."

"Oh. Well, it suppresses the — charge on the — electron. I think that's right. Then whatever is in the beam starts to tear itself apart. We use big ones to sculpture mountains." His voice dropped to a whisper. "We did." He started to choke, caught himself. Masney frowned.

Garner asked, "How long were you under water?"

"I think between one and two billion years. Your years or mine. They aren't much different."

"Then your race is probably dead."

"Yes." He looked at his hands, unbelievingly. "How in—" he gurgled, recovered. "How under the Power did I get into this body? Greenberg thought that was only a telepathy machine!"

Garner nodded. "Right. And you've been in that body, so to speak, all along. The alien's memories were superimposed on your brain, Greenberg. You've been doing the same thing with dolphins for years, but it never affected you this way. What's the matter with you, Greenberg? Snap out of it!"

The slave in the travel chair made no move to kill himself. "You—" Kzanol paused to translate — "Whitefood! You despicable, decaying, crippled whitefood with defective sex organs! Stop telling me who I am! I know who I am!" He looked down at his hands. Tears formed at the corners of his eyes and ran itching down his cheeks, but his face remained as expressionless as a moron's.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Garner blinked at him. "You think you are What's-His-Name the alien terror from outer space? Nuts. The alien is down on the first floor of this building, and he's perfectly harmless. If we could get him back to normal time he would be the first to call you an impostor . . . Part of what you said is true. I am, of course, an old man. But what is a, er, whitefood?" He made the word a separate question.

Kzanol had calmed down. "I translated. The whitefood is an artificial animal, created by the tnuctipun as a meat animal. A whitefood is as big as a dinosaur and as smooth and white as a shmoo. They're a lot like shmoos. We can use all of their bodies, and they eat free food, which is almost as cheap as air. Their shape is like a caterpillar reaching up for a leaf. The mouth is at the front of the belly foot."

"Free food?"

Kzanol didn't hear him. "That's funny," he said thoughtfully. "Garner, do you remember the pictures of bandersnatchi that the Jinx colony sent back? Greenberg was going to read a bandersnatch mind some day."

"Sure. Hey!"

"Bandersnatchi are whitefoods," said Kzanol. "They don't have minds."

"I guessed that. But son, you've got to remember that they've had two billion years to develop minds."

"It wouldn't help them. They can't mutate. They were designed that way. A whitefood is one big cell, with a chromosome as long as your arm and as thick as your finger. Radiation could never affect them, and the first thing that would be harmed by any injury would be the budding apparatus." Kzanol/Greenberg was bewildered. What price another coincidence?

"Why would the Jinxians think they were intelligent?"

"Well, for one thing," Garner said mildly, "the report said the brain was tremendous. Weighed as much as a ten-year-old boy."

Kzanol/Greenberg laughed. "They were designed for that, too. The brain of a whitefood has a wonderful flavor, so the tnuctip engineers increased its size. So?"

"So it's convoluted like a human brain."

Kzanol/Greenberg cracked his knuckles, then hurriedly separated his hands so that he couldn't do it again. The mystery of the intelligent 'bandersnatchi' bothered him, but he had other things to worry about. Why, for example, hadn't he been rescued? Three hundred years after he pushed the panic button, he must have struck the Earth like the destroying wrath of the Powergiver. Someone on the moon must have seen it.

Had the moon observation post been abandoned?

Garner crashed into his thoughts. "Maybe something bigger than a cosmic ray made the mutations. Something like a machine-gun volley, or a meteorite storm."

Kzanol shook his head. "Any other evidence?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Oh, hell yes. Right from the second landing. According to the report the *Lazy Eight II* landed near a herd of bandersnatchi. The oldsters were still alive, the ship hadn't been in space more than fifty years, and they insisted that the youngers, who still could move around, should kill and dissect a bandersnatch. The youngers went out and shot one. Immediately all the bandersnatchi in the area, who had been tame and curious up to that point, disappeared.

"Well, the biologists got their thrills. They found out that the bandersnatch was one big cell, just like you said, with a convoluted organ like an intelligent mammal's brain. They wanted another. They took the ship up and flew, oh, thirty miles west before they sighted another group.

"The bandersnatchi ran off while the ship was landing. From then on they never appeared within sight of the ship."

"Could these have been the same bandersnatchi?"

"Sure, Greenberg, but so what? To get behavior that uniform they must have had a language. Or so said most of the youngers. The oldsters knew better, of course. What use could a browsing vegetarian who can eat anything, with no appendages and no defenses and no natural enemies, have for intelligence? How would he possibly develop it?

"On the other hand — now *get* this — the bandersnatch was the only animal on the planet.

"Well, a few one-man helicopters went out with hunters. The bandersnatchi move awfully fast for something the size of a young mountain. They found that one bandersnatch was always within sight of a copter. And out of bullet range. Trouble came when copters tried to land. As soon as the pilot got too far away from the copter, a bandersnatch would charge in and flatten it.

"Then the bandersnatch started writing messages in the dirt."

"Nonsense," said Kzanol/Greenberg.

"The last report from Jinx included photographs." Garner hesitated in apparent indecision, then said, "Just a second." He spoke a few words into something, probably a peanut-sized mike, attached to his chair. "Come around in back of me," he told Greenberg.

Kzanol/Greenberg did so. Garner lifted a threevee screen out of one arm of his chair. There was three dimensional color static, then a fuzzy picture . . .

Curved lines, like snail tracks, on yellow sand. Dunes distorted them. A helicopter had landed among the tracks; it looked like a fly on a printed page. Kzanol gurgled, choked, and said, "I can read it. 'Leave our planet or we will deassemble your ship.' It's tnuctipun science language. Could I have some water?"

"Sure," said Masney. He jerked his thumb at the cooler. After a moment Kzanol got up and poured his own water.

Lloyd went over to Garner's chair and began talking in a low voice.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Luke, what is this? What are you doing?"

"Just satisfying curiosity. Relax Lloyd. Dr. Snyder will be here in an hour, then he can take over. Meanwhile there are lots of things I want to know. This isn't just a man with hallucinations, Lloyd.

"Why would the ET's race have thought that the bandersnatch was just a dumb animal? Why would a race as sophisticated as the tnuctipun must have been—" he pronounced the word as Kzanol/Greenberg had, badly — "have worked for Greenberg's race? Was it just telepathy?"

"I can tell you that," Kzanol/Greenberg said bitterly. He had drunk five cups of water, practically without breath. Now he was panting a little.

"You've got good ears," said Masney.

"No. I'm a little telepathic; just enough to get by on. It's Greenberg's power, but he didn't really believe in it so he couldn't use it. I can. Much good may it do me."

"So why did the tnuctipun work for you?" Masney messed up the works even worse than Garner had.

The question answered itself.

Everyone in the room jerked like hooked fish.

There was no fall. An instant after he put out his arms, Kzanol — the *real* Kzanol — was resting on his six fingertips like a man doing pushups. He stayed here for a moment, then got to his feet. The gravity was a little heavy.

Where was everybody? Where was the thrint or slave who had released him?

He was in an empty, hideously alien building, the kind that happen only on free slave worlds before the caretakers move in. But . . . how had he gotten here, when he was aimed at a deserted food planet? And where was everybody? He needed someone to tell him what was going on.

He Listened.

For some reason, neither human nor thrintun beings have flaps over their ears resembling the flaps over their eyes. The thrintun Power faculty is somewhat better protected. Kzanol was not forced to lower his mental shield all at once. But he chose to, and he paid for it.

It was like looking into an arc light from two feet away. Nowhere in the thrintun universe would it have been that intense. The slave worlds never held this heavy an overpopulation; and the teeming masses of the thrintun worlds kept their mind shields up in public.

Kzanol reeled from the pain. His reaction was automatic and immediate.

STOP THINKING AT ME! he roared at the bellowing minds of Topeka, Kansas.

VIII

In the complex of mental hospitals still called Menninger's, thousands of doctors and patients heard the command. Hundreds of patients eagerly took it as literal and permanent. Some became stu-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

pid and cured. Others went catatonic. A few who had been dangerously irresponsible became more so. A handful of doctors became patients; but they became an emergency when the casualties from downtown began pouring in. Menninger's was miles from Topeka Police Headquarters.

In the little room, everyone jerked like hooked fish. Then, all but Kzanol/Greenberg, they stopped moving. Their faces were empty. They were idiots.

In the first instant of the mental blast. Kzanol/Greenberg's mental shield went up with an almost audible clang. A roaring noise reverberated through his mind for minutes. When he could think again, he still didn't dare drop the mind shield.

There was a thrint on Earth!

The guards at the door now squatted or sat like rag dolls. Kzanol/Greenberg pulled cigarettes from a dark blue shirt pocket and lit one from the burning butt between Masney's lips, incidentally saving Masney a nasty burn. He sat and smoked while he thought about the other thrint.

Item: That thrint would see him as a slave.

Item: He, Kzanol, had a working mind shield. That might convice the thrint, whoever he was, that he, Kzanol, was a thrint in a human body. Or it might not. If it did, would the other thrint help? Or would he regard Kzanol/Greenberg as a mere ptavv, a Powerless thrint?

In ugly fact, Kzanol/Greenberg *was* a ptavv. He had to get his body back before the other found him.

And with that, incredibly, he stopped thinking about the other thrint. There was every reason to wonder about him. What was he doing on Earth? Would he claim Earth as his property? Would he help Kzanol/Greenberg reach Thrintun? (Or whatever new planet passed for Thrintun these days.) Did he still look thrintish, or had two billion years of evolution turned thrintun into monsters? But Kzanol/Greenberg dropped the subject and began to think about reaching Neptune. Perhaps he knew who the other thrint was, but wasn't ready to face it.

Cautiously he Listened. The thrint had left the building; he could find out nothing more, for the other's mind shield was up. He turned his Attention, such as it was, to the men in the room.

They were recovering, but very slowly. He had to listen with excruciating concentration because of the limits of Greenberg's brain, but he could feel their personalities reintegrating. The most advanced seemed to be Garner. Next was Masney.

Another part of the Greenberg memory was about to become useful. Greenberg had not lied about his dolphin-like sense of the practical joke. To implement it he had spent weeks learning a technique we shall call a party trick.

Kzanol/Greenberg bent over Lloyd Masney. "Lloyd," he said, in a distinct, calm, authoritative voice. "Your eyelids are getting heavy. So

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

heavy. Your fingers are becoming tired. So tired. Let them go limp. Your hands are so tired . . ."

He could feel the Masney personality responding beautifully. It gave no resistance at all.

The gravity was irritating. It was barely enough to notice at first, but after a few minutes it was exhausting. He gave up the idea of walking after he had gone less than a block, though he didn't like the idea of riding in a slave cart.

I'm not proud, he told himself. He climbed into a parked Cadillac and ordered the slacklipped driver to take him to the spaceport. There was a fang-jarring vibration, and the car took off with a wholly unnecessary jerk.

These slaves were much larger than the average land-bound sentient being. Kzanol had plenty of head room. After a moment he took off his helmet. The air was a little thin, which was puzzling. Otherwise it was good enough. He put the helmet on the seat and swung his legs over beside it; the seat was too wide for comfort.

The city was amazing. Huge and grotesque! The eye was faced with nothing but rectangular prisms, with here and there a yellow rectangular field or a flattish building with a strangely curved roof. The streets couldn't decide whether to be crooked or straight. Cars zipped by, buzzing like flying pests. The drone from the fans of his own car rasped on his nerves, until he learned to ignore it.

But where was he? He must have missed F124 somehow, and hit here. The driver knew that his planet — Earth? — had space travel, and therefore might know how to find F124. And the eighth planet of its system.

For it was already obvious that he would need the second suit. These slaves outnumbered him. They could destroy him at any time — and would, when they knew what he was. He had to get the control helmet to make himself safe. Then he would have to find a thrintun planet; and he might need a better spaceship than the humans had produced so far.

They must be made to produce better ships.

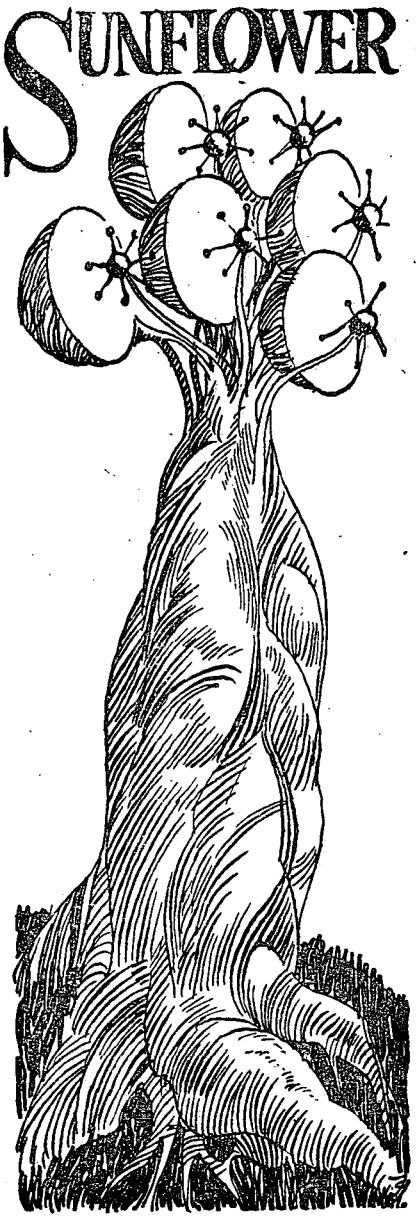
The buildings were getting lower, and there were even spaces between them. Had poor transportation made these slaves crowd together in clumps?

Some day he must spend the time to find out more about them. After all, they were his now.

There was no apparent need to be subtle. Once Kzanol/Greenberg had Masney fully under, he simply ordered Masney to take him to the spaceport. It took about fifteen minutes to reach the gate.

At first he couldn't guess why Masney was landing. Shouldn't he simply fly over the fence? Masney wasn't giving away information. His mind would have been nearly normal by now, and it was already normal for a hypnotized person. Masney 'knew' that he wasn't really hypnotized; he was only going along

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



with it for a joke. Any time now he would snap out of it and surprise Greenberg. Meanwhile he was calm and happy and free from the necessity of making decisions. He had been told to go to the spaceport and there he was. His passenger let him lead.

Not until they were down did Kzanol/Greenberg realize that Masney was waiting to be passed through by the guards. He asked, "Will the guards let us through?"

"No," said Masney.

Coosth, another setback. "Would they have let me through with—" he thought — "Garner?"

"Yes. Garner's an Arm."

"Well, turn around and go back for Garner."

The car whirred. "Wait a minute," said Kzanol/Greenberg "Sleep." Where were the guards?

Across a tremendous flat expanse of concrete, with large red targets painted at regular intervals in a hexagonal array, he could see the spaceships. There were twenty or thirty ramjet-rocket orbital craft, some fitted out to lift other spaceships to orbit. A magnetic cannon launcher ran down the entire south side of the field. Fusion-drive military rockets lay on their sides in docks, ready to be loaded onto the lifters. They all looked like motor scooters beside two truly gigantic craft. One thing like a monstrous tin of tuna, a circular flying wing resting on its tail, was the re-entry, cargo and life-support system of the *Lazy Eight III*. Anyone would have recognized her, even without the blue human's sign of infinity

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

on her flank. The other, far to the right, was a passenger ship as big as the old *Queen Mary*, a luxury transport bound for the Titan Hotel. And — even at this distance it was apparent that everybody, *everybody* was clustered around her entrance port.

Listening as hard as he could, Kzanol/Greenberg still couldn't find out what they were doing there. But he recognized the flavor of the too-calm thoughts. Those were tame slaves, slaves under orders.

The other thrint was here.

But why wasn't he taking his own ship? Or had he landed it here?

He told Masney, "The guard has told us to go ahead. Take the car over to that honeymoon special."

The car skimmed across the concrete.

Garner shook his head, let it fall back into place. His mind was the mind of a sleeping child. Across that mind flitted thoughts as ephemeral as dreams. They could not stay, because Garner had been ordered not to think.

I must look terribly senile, he thought once. The idea slipped away . . . and returned. Senile! I'm old but not senile. No? There is drool on my chin.

He shook his head, hard. He slapped his face with one hand. He was beginning to think again, but not fast enough to suit him. He fumbled at the controls of his chair and it lurched over to the coffee faucet. When he poured a cup his hand shook so that coffee spilled on his hand and wrist. Enraged, he hurled the cup at the wall.

His mind went back to white dullness.

A few minutes later Judy Greenberg wobbled through the door. She looked dazed, but her mind was functioning again. She saw Garner slumped in his travel chair wearing the face of a decrepit moron, and she poured cold water over his head until he came to life.

"Where is he?" Garner demanded, gasping.

"I don't know," Judy told him. "I saw him walk out, but it didn't seem to matter to me. What happened to us?"

"Something I should have expected." Garner was no longer a decrepit old man, but an angry Jehovah. "It means things have gone from worse to terrible. That alien statue — I knew there was something wrong with it the moment I saw it, but I couldn't see what it was. Oh, nuts!

"It had both arms out, like it was turning chicken halfway through a swan dive. I saw a little projection on his chest, too. Look. The alien put himself into a freeze field to avoid some disaster. After that the button that turned on the field was in the field, and so was the alien's finger pushing it in. So the button wouldn't need a catch to hold it in. It wouldn't have one.

"But the alien had both arms out when I saw it. When Jansky put his own field around the statue, the alien dropped Greenberg's 'digging-implement' and the button too. The button must have popped out.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Why he didn't come to life right then I don't know, unless the freeze field has inertia, like an electric current. But he's alive now, and that was him we heard."

"Well, it's quite a monster," said Judy. "Is that what my husband thinks he is?"

"Right." Garner's chair rose and raised a wind in the room. The chair slid out the door, picking up speed. Judy stared after it.

"Then if he sees that he isn't what he thinks he is—" she began hopefully. Then she gave it up.

One of the policemen got to his feet, moving like a sleepwalker.

IX

Kzanol took the guards with him on his tour of the spaceport. He also took all the repairmen, dispatchers, spacemen and even passengers he happened to meet while moving around.

The man he'd picked to drive him seemed to regard even a trip to Mars as a hazardous journey! If that was the state of Earth's space technology, Kzanol wanted a bundleful of expert opinions.

A couple of dispatchers were sent back to the office to try to find F124 on the star maps. The rest of the group came with Kzanol, growing as it moved. Just two men had the sense to hide when they saw the mob coming.

By the time he reached the passenger liner Kzanol was towing everyone at the spaceport but those two cautious men, Masney, and Kzanol/Greenberg.

He had already chosen the *Lazy Eight III*, the only interstellar ship on the field. While he was getting the rescue switch on his back repaired, slaves could finish building and orbitting the ship's drive unit and fuel tanks. It would be at least a year before he was ready to leave Earth. Then he would take a large crew and pass the journey in stasis, with his slaves to wake him whenever a new child became old enough to take orders. Their descendants would wake him at the end of the journey.

This exploration trip, thought Kzanol, is taking longer than I dreamed it might. Will I ever see Thrintun again?

Well, at least he had time to burn. He might as well burn it. As long as he was here, he might as well see what a human called a luxury ship.

He was impressed despite himself.

There were thrintun liners bigger than this ship, and a few which were far bigger; but not many managed a greater air of luxury. Those that did carried the owners of planets. The ramjets under the triangular wing were almost as big as the military ships on the field. The builders of the *Golden Circle* had cut corners only where they wouldn't show. The lounge looked huge; much bigger than it actually was. It was paneled in gold and navy blue. Crash couches folded into the wall to give way to a bar, a small dance floor, a compact casino. The front wall was a giant threevee screen. When the level of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

water in the fuel tanks became low enough, an entrance from the lounge turned the tank into a swimming pool.

Kzanol was puzzled by the layout until he realized that the fusion drive was in the belly. Ramjets would lift the ship to a safe altitude, but from then on the fusion drive would send thrust up instead of forward. The ship used water instead of liquid hydrogen — not because the passengers needed a pool, but because water was safer to carry and provided a reserve oxygen supply. The staterooms were miracles of miniaturization.

There were, thought Kzanol, ideas here that he could use when he got back to civilization. He sat down in one of the lounge crash couches and began reading some of the literature stuffed into the backs. One of the first things he found, of course, was a beautifully colored picture of Saturn seen from Titan.

Of course he recognized it. He began to ask eager questions of the men around him.

The truth hit him all at once.

Kzanol/Greenberg gasped, and his shield went up with a clang. Masney wasn't so fortunate. He shrieked and clutched his head, and shrieked again. In Topeka, thirty miles away, unusually sensitive people heard the scream of rage and grief and desolation. Garner, with a curiosity and courage unmatched over most of Kansas, listened in hope of learning something useful. All he got was pain.

"It doesn't hurt," said Kzanol/Greenberg in a calm, reassuring, very loud voice. The loudness, hopefully, would carry over Masney's screaming. "You can feel it but it doesn't hurt. Anyway, you have enormous courage, more than you have ever had in your life." Masney stopped screaming, but his face was a mask of suffering. "All right." said Kzanol/Greenberg. "Sleep." He brushed Masney's face with his fingertips. Masney collapsed. The car continued weightlessly across the concrete, aiming itself at the cylindrical shell that was the *Lazy Eight III*. Kzanol/Greenberg let it go. He couldn't operate the controls from the back seat, and Masney was in no shape to help. He could have cut the air cushion, by stretching — but only if he wanted to die.

The mental scream ended. He put his hand on Masney's shoulder and said, "Stop the car, Lloyd." Masney took over with no sign, physical or mental, of panic. The car dropped gently to the ground two yards from the outer hull of the giant colony ship.

"Sleep," said Kzanol/Greenberg, and Masney slept. It would probably do him good. He was still under hypnosis, and would be deeper when he awakened. As for Kzanol/Greenberg, he didn't know what he wanted. To rest and think perhaps. Food wouldn't hurt him either, he decided. He had recognized the mind that screamed its pain over half of Kansas, and he needed time to know that he was not Kzanol, thrint, lord of creation.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

By and by there was a roar like a fusor exploding. Kzanol/Greenberg saw a wave of flaming smoke pour across the concrete, then gradually diminish. He couldn't imagine what it was. Cautiously he lowered his mind shield and found out.

Jato units. Kzanol was going after the second suit!

X

In the dead of August the Kansas countryside was a steam bath with sunlamps. Under the city's temperature umbrella it was a cool, somewhat breezy autumn, but the air hit Luke like the breath of Hell as his chair shot through the intangible barrier between Cool and Hot. From there he traveled at top speed, not much caring if his chair broke down as long as he could get into an air-conditioned hospital.

He stopped at the spaceport check point, was cleared immediately, and crossed the concrete like a ram on a catapult. The hospital stood like a wedge of swiss cheese at the edge of the vast landing field, its sharp corner pointing inward. He got inside before heat stroke could claim him.

The line before the elevator door was discouragingly long. His chair was rather bulky; he would need an elevator almost to himself. And people were no longer polite to their elders. There were too many elders around these days. Garner inhaled deeply of cool air, then went back out.

Outside the doors he fumbled in the ash tray on the left arm of his chair. The motor's purr rose to a howl, and suddenly it wasn't a ground-effect motor any more. If Masney could see him now! Six years ago Masney had profanely told him to get rid of the illegal power booster or be run in. Anything for a friend, Luke had reasoned, and had hidden the control in the ash tray. The ground became smaller and dimmer. The edge of the building shot downward past him: sixty stories of it. Then he was over the sun deck. He brought the travel chair down on the roof and scooted past the startled sunbathing patients and into the elevator.

Going down it was dead empty. He got out on the fifty-second floor and showed his credentials to a nurse.

They were all in one ward. Miday, Sandler, Buzin, Katz — there were twenty-eight of them, the men who had been closest to Kzanol when he threw his tantrum. Seven were buried in plastic cocoons. The alien had forgotten to order them to cover, so they had been in the way of the blast when the Golden Circle took off. The others were under sleep-inductors. Their faces twisted sometimes with the violence of their dreams.

"I'm Jim Skarwold," said a blond, chubby man in an interne's uniform. "I've heard of you, Mr. Garner. Is there anything I can do for you?"

"There better be." Garner sent his glance down the line of beds. "Can any of these men stand a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

dose of scopolamine? They have information I need desperately."

"Scop? I don't think so. Mr. Garner, what happened to them? I took some psychiatry in college, but I never heard of anything like this. It isn't withdrawal from reality, it isn't straight or crooked fear. They're in despair, but not like other people."

"I was told they got this way from contact with an ET. If you could tell me more about it, I'd have a much better chance of treating them."

"Right. Here's what I know," said Garner. He told the doctor everything that had happened since the statue had been retrieved from the ocean. The doctor listened in silence.

"Then it isn't just a telepath," he said when Garner had finished. "It can control minds. But what could it have ordered them to do that would produce *this?*" He gestured at the row of beds.

"Nothing. I don't think he was giving orders at the time. He just got a helluva shock and started feeling out loud. That's what put these men in shock.

"Now, if I were planning to treat them, I'd find out first who they think they are. Themselves? Or the alien?

"Being me, I want to know why both Greenberg and the ET separately stole spaceships and went rocketing off. They must know they've got interplanetary ships, not interstellar ones. Is there an alien base in the solar system? What are they after?

"Perhaps we can scratch both problems at the same time, Dr. Skarwold."

"Yes," said Skarwold slowly. "Perhaps you're right. Give me an hour to find the man with the strongest heart."

That was why Luke always carried paperbacks in the glove compartment of his chair. His career involved a lot of waiting.

Arthur T. Katz, qualified ramjet-rocket booster pilot (types C, D, and H-1), thrashed violently. His arms flailed without purpose. He began to make noises.

"It'll be a few minutes," said Skarwold. "He's out of the sleep-inductor, but he has to wake up naturally."

Garner nodded. He was studying the man intently, with his eyes narrowed and his lips tightened slightly. He might have been watching a strange dog, wondering whether it wanted to lick his face or tear his throat out.

Katz opened his eyes. They became very round, then closed desperately tight. Cautiously Katz opened them again. He screamed, and waved his arms meaninglessly in the air. Then he started to choke. It was horrible to watch. Whenever he somehow managed to catch his breath he would gasp for air for a few seconds, open his mouth, and begin to choke again. He was terrified, and, thought Garner, not merely because he might suffocate.

Skarwold pushed a switch and Katz's autodoc sprayed sedative into his lungs. Katz flopped back and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

began to breath deeply. Skarwold turned on Katz's sleep inductor.

Abruptly Garner asked, "Are any of these people the least bit psychic?"

Arnold Diller, fusion drive inspector (all types), took a deep breath and began turning his head back and forth. Not gently. It seemed he was trying to break his own neck.

"I wish we could have found someone with a high telepathic aptitude," said Garner. Between the palms of his oversized hands he rolled the sawdust fragments of a cigarette. "He would have had a better chance. Look at the poor guy!"

Skarwold said, "I think he's got a good chance."

Garner shook his head. "He's only a poor man's prescient. If he were any good at that he'd have been running instead of hiding when the ET blew up. How could it protect him against telepathy anyway? He—" Skarwold joggled his arm for silence.

"Diller!" said Skarwold, with authority. Diller stopped tossing his head and looked up. "Can you understand me, Diller?"

Diller opened his mouth and started to strangle. He closed it again, and nodded, breathing through his nose.

"My name is Skarwold. I'm your doctor." He paused as if in doubt. "You *are* Arnold Diller, aren't you?"

"Yes." The voice was rusty, hesitant, as if it hadn't been used in years. Something inside Garner relaxed, and he noticed his handful of sawdust and dropped it.

"How do you feel?"

"Terrible. I keep wanting to breathe wrong, talk wrong—could I have a cigarette?" Garner handed him a lighted one. Diller's voice began to sound better, more proficient. "That was strange. I tried to *make* you give me a cigarette. By telepathy, I guess. When you just sat there I wanted to get mad. I had to fight it down." He frowned. "Say, how come I rate a human doctor, anyway?"

"What happened to you isn't programmed into the autodocs," Skarwold said lightly. "It's a good thing you had the sense to hide when you did. The others were closer. They're in much worse shape, too. Is your prescient sense working?"

"It's not telling me anything. I can never count on it anyway. Why?"

"Well, that's why I picked you. I thought if you missed it you could get over the notion that you were a certain alien."

"A certain—" Diller started strangling. He stopped breathing entirely for a moment, then resumed slowly, through distended nostrils. "I remember," he said. "I saw this *thing* coming across the field, with a bunch of people trailing after it, and I wondered what it was. Then something went wrong in my head. I didn't wait any more. I just ran like hell and got behind a building. Something going on in my head kept bugging me, and I wanted to get closer to it but I

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

knew that was wrong, and then *aarrrghgh* —"

Diller stopped and swallowed; his eyes were mad with fear until he could breathe again.

"All right, Diller, it's all right," Skarwold kept repeating. Diller's breathing went back to normal, but he didn't talk. Skarwold said, "I'd like to introduce Mr. Garner of the United Nations Police."

Diller gave a polite nod. His curiosity was plain. Garner said, "We'd like to catch this ET before he does any more damage. If you don't mind, I think you may have some information that we don't."

Diller nodded.

"About five minutes after that telepathic blast hit you, the alien took off. An hour later he was followed by a human being who has reason to believe that *he* is the alien. He has false memories. They're both headed in the same general direction. They're after something. Can you tell me what it is?"

"No," said Diller.

Garner said, "You may have gotten something in that mental blast. Please try to remember, Diller."

"I don't remember anything, Garner."

"But —"

"You old fool! Do you think I want to choke to death? Every time I start to think about what happened I start strangling! I start thinking funny, too. Everything looks strange. I feel surrounded by enemies. But worst of all, I get so *depressed!* No. I don't remember anything. Get out."

Garner sighed and ostentatiously put his hands on the chair controls. "If you change your mind —"

"I won't. So there's no need to come back."

"I won't be able to. I'm going after them."

"In a spaceship? You?"

"I've got to," said Garner. Nevertheless he glanced involuntarily at his crossed legs — crossed this morning, by hand. "I've got to," he repeated. "There's no telling what they want, but it must be something worthwhile. They're going to too much trouble to get it. It could be a weapon, or a signal device to call their planet."

The travel chair whirred.

"Half a minute," said Diller.

Garner turned off the motor and waited. Diller leaned back and looked up at the ceiling. His face began to change. The expression he wore was no longer a mirror of his personality, but a random dispersal of muscle tensions. His breathing was ragged.

Finally he looked up. He started to speak and failed. He cleared his throat and tried again. "An amplifier. The — the bastard has an amplifier in a suit on the eighth planet."

"Fine! What does it amplify?" asked Garner.

Diller started to choke.

"Never mind," said Garner. "I think I know."

His chair left the room, going much too fast.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"They're both runnin' scared," said Garner. "Headed for Neptune at one gee, with your husband an hour and a half behind."

"But aren't you sending someone after him?" Judy begged. "He isn't responsible, he doesn't know what he's doing."

"Sure. We're sending me. He's got my partner, you know." Seeing Mrs. Greenberg's face, he added quickly, "They're in the same ship. He can't protect Masney without protecting Greenberg." He glanced at his watch. "They ought to be calling me in a couple of hours to tell me my ship is ready."

They sat in Judy's hotel room sipping Tom Collinses. Somehow it was easier waiting in company, for two people who could do nothing but wait.

"Do you know how he got away?" Judy asked.

"Yah. Everybody at the spaceport was knocked coocoo by the ET. Greenberg managed to hypnotize a booster pilot who was hiding behind a building. Then he picked out a ship and had the booster man take it up. He's got Lloyd as ship's pilot. Lloyd knows how to fly the ship, worse luck."

"And they're going to Neptune. Why?"

"I don't know. Don't you have a sort of telepathic link with your husband?"

"I did," she said bitterly. "Not any more. Since he went into Jansky's time field I can't feel anything any more."

"Well, it wouldn't feel like him anyway. Do you remember how you felt at twenty hours, night before last?"

"At twenty? Let me see." She closed her eyes. "Wasn't I asleep . . . ? Oh. Something woke me up and I couldn't go back to sleep. I had the feeling that something was terribly wrong. Monsters in the shadows. I was right, wasn't I?"

"Yes. Especially if it was Greenberg's mind you felt." He gave that a moment to sink in. "And since then?"

"Nothing." Her self control gave way. "Nothing! Except that I want to find him. Find him! That's all I've wanted since he stole the ship! Find him before something . . ."

There wasn't any question of finding it, he told himself for the hundredth time. But he had to find it first. He had to find it before Kzanol, the real Kzanol, did. And for the hundredth time he wondered if he could.

The Earth had been invisible for hours.

On the great white screen in the Space Traffic Control Center, two dark blobs hung almost motionless. Halley Johnson swung his phone camera around so that Garner could see it.

"The military ship is going just a teeny bit faster than the honeymooner. If it's really going all the way to Neptune they'll pass each other."

"Where else can they be going?"

"A number of asteroids. I have a list."

"Read it."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Johnson read off the names of fourteen minor Green deities. "A lot more have been crossed off," he added. "When the ship crosses the turnover point and keeps accelerating, we mark it out."

"Okay. Keep me posted. How about my ship?"

"Be ready in an hour."

XI

Like a feathered arrow the *Golden Circle* fell away from the sun. The comparison was hackneyed but accurate; for the giant triangular wing was right at the rear of the ship, with the slender shaft of the fuselage projecting deep into the forward tip. The small forward wings had folded into the sides shortly after takeoff. The big fin was a maze of piping. Live steam, heated by the drive, through a generator before returning to start the journey again. Most of the power was fed back into the fusion shield of the drive tube. The rest of the power fed the life-support system.

In one respect the "arrow" simile was inexact. The arrow flew sideways, riding on the sun-hot torch which burned in its belly.

Kzanol roared his displeasure. The cards had failed again! He swept the neat little array between his clublike hands, tapped them into deck formation, and ripped the deck across. Then, carefully, he got to his feet. The drive developed one terran gravity, and he hadn't quite had time to get used to the extra weight. He sat down at the casino table and dug into the locker underneath. He came out with a new deck of cards, opened it, let the automatic shuffler play with it for awhile, then took it out and began to lay it out solitaire style. The floor around him was littered with little pieces of card.

Perhaps he could think up some fitting punishment for the pilot, who had taught him this ridiculous game.

The pilot and copilot sat motionless in the control room. From time to time the pilot used his hands to change course a trifle. Every fourteen hours or so the copilot would bring Kzanol a glass of water and then return to her seat. Actinic gas streamed from the belly of the ship, pushing it to ever higher velocities.

It was a beautiful night. Years had passed since Garner had last seen the stars. In the cities they couldn't shine through the smog and the neon glare, and the American continent was mostly city. Soon he would see them more clearly than he had in half a century. The air was like the breath of Satan. Garner was damp with sweat, and so were Anderson and Neumuth.

"I still say we could do this by ourselves," said Anderson.

"You wouldn't know what to look for," Garner countered. "I've trained myself for this. I've been reading science fiction for decades. Centuries! Neumuth, where are you going?"

Neumuth, the short dark one,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

had turned and was walking away. "Time to get strapped down," he called back. "Bon voyage!"

"He's going forward, to the cockpit of the booster," said Anderson. "We go up that escalator to the ship itself."

"Oh. I wish I could see it better. It's just one big shadow."

The shadow was a humped shadow, like a paper dart with a big lizard clinging to its back. The paper glider was a ramjet-rocketplane, hydrogen-fueled in the ramjet and using the cold liquid hydrogen to make its own liquid oxygen in flight. The slim cylinder clinging to the upper surface was a fusion-drive cruiser with some attachments for rescue work. It carried two men. Using its fusion motor in Earth's atmosphere was a capital offense.

Light flared as another ship took off. Garner blinked. "That was our rendezvous ship," Anderson said matter-of-factly.

Garner was tired of having to ask silly-seeming questions. He wasn't going to like Anderson, he decided. If the kid wanted to tell him why they needed a rendezvous ship, he would.

They had reached the bottom of the escalator. "Meet you at the top," said Garner, reaching into his ashtray. Anderson stared, jolted, as the wheel chair became a flying saucer. An Arm using an illegal flying machine? An *Arm?*

Anderson rode up the stairs, whistling. This trip might be fun after all.

"Just leave the chair on the escalator platform," he said at the top. "They'll take good care of it. I'll carry you in, sir."

"I'll walk," said Garner. And he did, wobbling and using his arms freely. Anderson checked Garner's web before he used his own.

"Neumuth? Ready," said Anderson, as if into thin air. He continued, "The other ramrocket carried a bundle of solid fuel rockets as big as this ship. They're strap-ons. We don't have any more power than the *Golden Circle* or the ship your friend is on, and we're a day and a half behind them, so we use the strap-ons to give us an initial boost. Inefficient, but if it works—"

"—it's good," Garner finished for him. His voice was thickened by the pull of the catapult. For ten seconds the soundless pressure lasted, one gravity of pull. Then the rams went on and they were off.

One gravity is standard for spaceships. Some rescue ships, and a few expresses among the asteroids, use clusters of fusion engines to get where they're going. Often it makes sense. More often it doesn't. Given continuous acceleration, the decrease in trip time varies as the square root of the increase in power. The two ships Garner was following would have expected their pursuers, had they known of them, to stay a day and a half behind all the way to Neptune.

It would take two days of uncomfortable two gee acceleration to get there first, thought Garner, compressed in his chair. His old bones would take a beating. And

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

he was already missing the gadgets in his own chair. This trip wasn't going to be fun.

The dolphin named Charley sank to the bottom of the tank to think. The others gathered round, peering in, waiting.

Judy noticed that Mrs. Jansky was keeping her distance. She must blame Larry for putting those bandages on her husband. Surprisingly, Jansky did not. He was using a travel chair, he had explained, because the pull of the bandages on the exposed meat of his back made it impossible to walk. The chair didn't seem to hamper him. He used it like a new toy, an indoor motor scooter.

This was all his fault, Judy thought dispassionately, trying the concept on for size. It didn't fit. She couldn't blame Jansky.

Charley surfaced and blew steam. "Maybe I can tell you something," he quacked. "I had a couple of days to get used to Larry in my head. He thinks a lot like me . . . There is some of me in him, but changed. Like he took a few of my jokes, or what I call jokes, translated them into something he can use as himself, on land and with people, then decided not to use them because he might go to prison for it. If he is no longer afraid of arrest he might be tempted to play his jokes."

"Thank you, Charley," said Torrance, the thin, balding marine biologist. "Anything else?"

"Yes, but I have not had a chance to try it yet. Hypnotism. Larry has studied it thoroughly, and even tried it out. It works for him. It might not work on a swimmer."

"He's already used it," said Torrance. "If you think of anything else, will you let me know?"

"Sure. I'll stick around anyway, to see how this comes out." Charley wiggled his body and shot out through the underwater pipe.

Snyder said, "Has anyone got any comments for the tape?" People shook their heads or otherwise declined the honor. "Okay. I've got some," said Snyder. His voice was distorted by the pull of the bandages on his cheeks and lower lip. They left a broad X of free skin across his face. "Garner, I don't think it's as simple as Charley would have it, if only because Greenberg thinks he's an ET. But we've got to keep in mind that everything he's done since he shot us with the disintegrator has been done with Larry's own memories and learned habits and reflexes. I grant he used ET memories to use that gun, but ever since then, whether he was walking or flying a car or hypnotizing your friend or blinking or sneezing, he was Greenberg. It's got to have some effect on his actions. Over." He pushed the sender and turned to the others. "It'll be seven minutes or so before we get his answer."

Luke waited until Snyder had finished, then flicked to 'transmit'. "Thanks, Dr. Snyder. Thank Charley for me. There's one thing you don't know." He paused to wheeze for breath. "Greenberg and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the ET are both looking for the same thing. I believe they're on their way to Neptune to get an amplifier for the ET's power to make puppets out of humans." He had to stop again. "If that's true. then Greenberg is acting from purely alien motives. Probably he can't even use the machine himself. So he's thinking like an alien, not like himself. We can't count on anything.

"I've got to stop. Over and out." He turned off the set and let his arm drop back. Even the effort of working the radio had exhausted him.

Two gravities! Twelve hours ago he would have sneered at himself. Two gravities, lying on his back? He could have done it on his head. But that was twelve hours ago, twelve hours of double weight and throbbing metal and noise and no sleep. The strap-on fission motors, half a century obsolete, roared in pairs outside the hull. Two had been dropped already. Ten remained, burning two at a time. It would be a day and a half before ship weight returned to normal . . .

The weight wasn't bothering Anderson at all.

Well, it was all in a good cause. The ETs — it was just as well to think of them like that — would have to give him plenty of warning before they reached their destination. They would be ahead of him long enough. Halfway to where they were going — in about six days, if they were really headed for Neptune — they would have to turn around to decelerate. Luke and Anderson had nothing to do until the ETs told them what to do.

Luke went to sleep, finally, smiling. He smiled because the gees were pulling on his cheeks. Anderson was sleeping too, letting the autopilot do the work.

At twenty-one hours the next day, the last strap-on motors burned out and were dropped. Garner scowled ferociously, just to test his facial muscles. The ship went on at one gee.

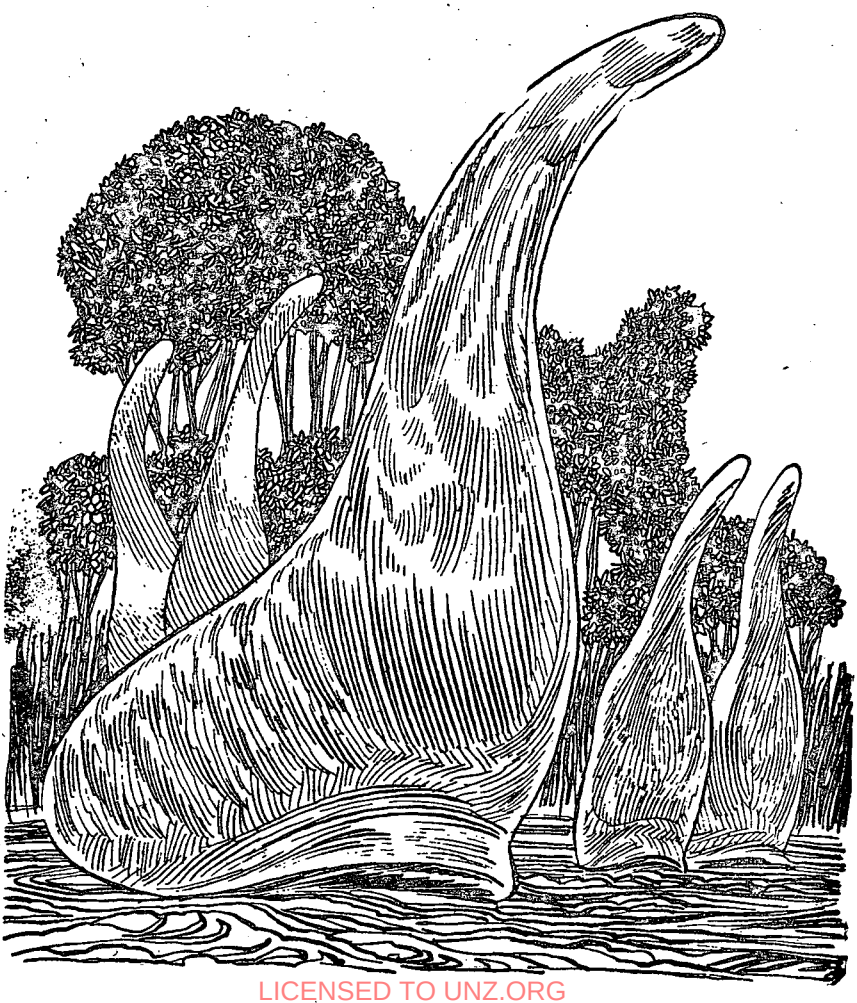
It was above the plane of the solar system, avoiding the rocks of the Belt, but there were still a few pebbles to watch for. They were also Belt ships close enough to pick up Anderson's radar.

An hour later the radio came to life. The Belt government wanted to know what the hell an Earth ship was doing in its territory. Garner spent ten minutes telling the officer, then an hour and a half adding details. Anderson spent the time keeping the beam fixed and sensibly let Luke do the talking. The officer didn't believe him. Luke knew that he couldn't afford to; the propaganda value of the Belt being taken in on such a wild story would be enormous.

"Do this," he said finally. "Send a few armed ships to follow me to Neptune. I'm sure that's where they're going; they've passed most of the asteroids already. It'll take your men a while to catch us. They may get there in time to help us out, and they may not. If you think I'm a liar, then send your men along to make sure I don't do any

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

WHITEFOOD



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

poaching. But arm them anyway. The only other choice you have under the circumstances is to start a war, right? Right. If you want my story confirmed call the Arm office in Los Angeles, then call the UN Comparative Culture Exhibit Office in Brasilia and ask if they've still got the Sea Statue. That's all you can do. So call me back and tell me how many ships you're sending." He gestured to Anderson, who turned him off.

"Jerk," said Anderson.

"Not at all," said Garner. "He did the right thing. His superiors will too. They'll send a group of ships, including one with antiradar which will have to get there a little later than the others. Then they'll call Earth and get my story confirmed as well as they can. The worst they can think of me then is that I'm thorough. Then they'll call us and say they're sending one less ship than they are, not mentioning the antiradar ship. That ship gives them every chance to catch me red-handed, doing whatever illegal treaty-breaking thing they think I'm doing, especially since I don't know they've discovered antiradar—"

"Uh-huh."

"—but if they don't catch me at anything then they cooperated with me."

"Uh-huh. It's perfect. But will they be able to handle it when we turn out to be telling the truth?"

"Sure. They'll be armed for us, and a weapon is a weapon. Besides which, some of them will believe me. Belters, they're always waiting for the first ET. They'll be armed for bear." Garner rubbed his scalp.

"I wonder what the ET is armed for," he said.

XII

Four and a half days later neither Greenberg nor Kzanol had turned ship. It seemed they were really headed for Neptune. If so they would be turning in eighteen hours.

It was already time for Anderson to turn ship. He did. "We'll get there six hours ahead of them," he told Garner.

"Good."

"Of course, they could be headed for outer space. It could be a coincidence that they're going in that direction. Then we'll lose them."

"In those ships? Besides, I never doubted they were going to Neptune. I just didn't want to take chances."

"Uh-huh. I'm just hypothesizing. How about some lunch?"

"Good." It was high noon. The life-support region didn't include enough room to walk around in, but it did have a robot kitchen; and one thing the space conquerors had learned early was that caviar is cheaper than corn flakes. Caviar has far more food value per payload ounce. So Garner and Anderson ate prefrozen Crepes Veronique and wondered how long it would be before they could exercise off the extra pounds.

While they were feeding the plates back into the food slot, Gar-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ner found something else to worry about. "Can we turn our telescope around?"

"Sure. Why?"

"To follow the other ships. They're still ahead of us, and we're moving backward."

"We can't see them now because they're blocked by the glare of our exhaust. But we'll be passing them in six hours, and we can watch them from then on."

"We'll never catch them," said the man in the lead ship. He was a tall, spindly Negro with prematurely white hair. "They're two days ahead of us all the way. Poachers!"

"I've got something on the scope," said one of the other ships. Every ship carried one man, as was customary.

"Like what?"

"Specks of hydrogen light. Moving almost as fast as the Arm, judging by the red shift. Way ahead of him."

"Is it too late to call Ceres?"

"Direct, yes. Tartov! Call Phoebe and say that there are three ships headed for Neptune. Give their positions. I want ETAs for all of them."

"I hear you, Lew."

The fleet of five ships looked like a small swarm of fireflies. They were only thousands of miles apart; they stayed that close to avoid irritating message delays. The distance would have hidden them from each other if they had been using chemical fuels, but the searing light of the fusion drives showed brighter than any of the surrounding stars.

"Lew?"

"Here."

"I think one of them is the honeymoon special. It's got a strong oxygen line in its spectrum."

"Yeah?" There were a couple of surprised whistles. Then the man in the lead ship said, "The Arms are thorough, you've got to give them credit."

Tartov said, "They must be after something big. Something tremendous."

None of the others spoke. Perhaps they were reserving judgment. Behind the swarm, falling farther behind with each second, a lone firefly struggled in pursuit.

Something went by like a falling comet, if there were such a thing. "There goes Greenberg," said Anderson, grinning. The blue-white light faded slowly into the background of stars. "The *Golden Circle* should be by in a few minutes," he added. "Greenberg's ship is just a touch faster."

Garner didn't answer.

Anderson turned to look at him. "Something bugging you?" he asked kindly.

Garner nodded. "I've been thinking about it for days. I just now realized that there isn't any good answer. It's like trying to keep a teleport in jail."

"What's?"

"Trying to keep either of those birds from picking up the amplifier."

He slapped his chair absently for the cigarette button, caught him-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

self and scowled. "Look. We can't get to it first. We don't know how they plan to find it themselves. Probably they just remember where they put it. We can't arrest them; at least we can't arrest the ET because he'd just turn us into spare butlers, and we'll have trouble with Greenberg because he's got an armed ship and Masney can use the guns. He may be better than you, son." Garner looked horribly like a Greek tragic mask, but his voice was that of a very worried man. "It seems to me that the only thing we can do is shoot on sight."

"You can't do that," Anderson protested. "You'll kill Greenberg and Masney both!"

"I don't want to kill anyone. Give me another choice!"

"Well, give me a chance to! I haven't even thought about it yet!" He screwed his face into a smooth semblance of Garner's. "Hey!" He exclaimed suddenly. "Yeah, I've got something. You don't have to shoot on sight. You can wait to find out if what they're looking for is really on Neptune."

"What good will that do?"

"They could have left something on one of the moons, or in orbit. But if it's on Neptune, they can't get at it! Neither of their ships develops more than one gee. Neptunes pull is higher than that. They can't land."

"No good. The ET has a winged ship. But that's good thinking anyway, son."

"You bet it is," said Anderson angrily. "How the hell is he going to get back up?"

Luke Garner looked like he'd seen a vision. After a moment he asked, "Son, have you ever thought of joining the Arms?"

"Why—" Anderson began modestly—

Who are you?

The two stared at one another.

WHO ARE YOU?

"Lucas Launcelot Garner. Arm."

"Leroy. George Anderson's boy. The astronaut."

I DON'T WANT YOU FOLLOWING ME. The Mind was blasting, angry. Even when merely "thinking aloud", it held Garner and Anderson physically and mentally paralyzed. Then It came to a decision. Anderson reached toward the control panel.

Garner pushed him back with one hand.

It lashed him. Garner felt it stop his heart, and he gasped, horribly. Right now? he wondered. His sight turned red and went out . . .

He came back to life with a singing in his head. Anderson was looking terribly haggard. He had a spray hypo in his hand. "Thank God," he blurted. "I thought you were gone."

"Heart stopped," Garner wheezed. (Not this time!) "First time it's ever happened. What did you use?"

"Adrenalin in the heart. Are you all right?"

"Sure. Considering."

Anderson was still pale. "You know what he told me to do? I was going to turn off the fusion shield! They'd have seen it from Earth." He shuddered. "In daylight

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

they'd have seen it! Very lucky thing you stopped me. But how did you know?"

"I knew what he wanted for a result. Never mind. How did you know it was my heart?"

"I could feel him do it. Well, we won't have to worry about him until we get to Neptune. He went out of range right after he stopped your heart."

"We'll have to shoot first with that bird."

"It'll be a pleasure," Anderson said furiously.

Kzanol strained to hang onto the enemy minds, but it was no use. Not only was distance against him; the difference in velocities was even more of a barrier. A slight relativistic difference in time rates could make communication impossible, even between two thrints.

He turned his attention back to the cards. The pilot, who was English, called this game Patience. It was a good name. Kzanol was learning patience the hard way. The floor of the lounge was littered with scraps of torn plastic; but this one deck had already survived ten lost games. It was the last deck on board.

Growling in his throat, like the carnivore he was, Kzanol scraped the cards together and shuffled them. He was learning coordination, too. And he had learned something about himself: he would not let a slave see him cheating at cards. He had cheated once, and the pilot had somehow guessed. He caught a stray impulse. Another would not cheat again.

Kzanol jumped as his mind caught a stray impulse. Another pursuer! This one was too far to the side to control, but easily close enough to sense. And yet... the image had a fuzziness that had nothing to do with distance. As if the slave were asleep. But... different.

For half an hour it stayed within reach. In that time Kzanol had satisfied himself that there was no other sentient on board. He did not think of another thrint. He would have recognized the taste of a thrint command . . .

At six hours the next morning, Greenberg's ship turned around. Three minutes later the *Golden Circle* did the same. Anderson found the prints in the scope camera: two lights which stretched slowly into bright lines, then contracted with equal deliberation into somewhat brighter points.

The time passed slowly. Garner and Anderson were already deep in a tournament which they played on the viewer screen: a rectangular array of dots to be connected by lines, with victory going to the player who completed the most squares. Almost every day they raised the stakes.

On the morning of the last day Garner got back to even. At one point he had been almost eleven thousand dollars in debt. "See?" he said. "You don't give up all your pleasures as you get older."

"Just one," said Anderson.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"More than that," Garner admitted. "My taste buds have been wearing out for lo, these many years. But I guess someday someone will find a way to replace them. Just like my spinal cord. That wore out too."

"Have you got any better idea of what we do when we get to Neptune? Do we hide on one of the moons and watch?"

"Right," said Garner.

But half an hour later he asked, "Can we reach Earth from here?"

"Only by maser," Anderson said dubiously. "Everyone on Earth with a radio will be able to listen in. Have you got any secrets from the man on the slidewalk?"

"Don't worry about it. Aim a maser at Earth."

It took half an hour for Anderson to center the beam and set it for tracking. "If it's 'Love to Mother', you're dead," he warned Garner.

"My mother passed away some time ago. In fact, it's been just about a century. And she thought she was an old woman! Hello, ARM Headquarters. This is Lucas Garner calling the United Nations Police."

Anderson nudged him with an elbow. "Are you waiting for an answer, shnook?"

"Of course not!" Habits are hard to break. "This is Garner calling ARM Headquarters, Earth. Please aim your answer at Neptune. We urgently need the following information from Dorcas Jansky. Does his retarder field stop radar completely? Repeat, completely. Would the ET spacesuit do the same?" He put down the mike. "Okay, son, repeat that a few times."

"All right, it's on repeat. Now what was that all about?"

"I don't know why it took me so long to figure it out," Garner said smugly. "The ET has been frozen for about two billion years, according to Greenberg. He couldn't know that there's something on Neptune unless he put it there two billion years ago. And could he assume that it hasn't fallen apart or rusted to death or whatever, after that long?"

"It's in a retarder field?"

"Right."

Anderson looked at the chron. "You'll be getting your answer in a little over eight hours, not counting the time it takes them to get What's-his-name. Figure an hour; they'll be calling around nineteen-thirty. So let's get some sleep. We'll be coming in about three tomorrow morning."

"Okay. Sleeping pills?"

"Uh-huh." Anderson punched buttons on the medicine box. "Luke, I still think you were waiting for Earth to answer."

"You can't prove it, son."

Nineteen forty-five. Garner studied the board for a moment, then drew one short line between two dots of light. The scanner, set to follow the movements of the tip of his stylus, reproduced the line on the board.

The radio boomed to life.

"This is ARM Headquarters calling spaceship *Heinlein*. ARM Headquarters calling Lucas Garner,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

spaceship *Heinlein*. A retarder field does, repeat does reflect one hundred per cent of energy of any frequency, including radar, and including everything so far tried. Visible, ultraviolet, infrared, radio, X rays. Is there anything else we can help you with?"

"You can help me with this game," Luke muttered. But Anderson had erased it, along with the six-inch curve Luke had drawn when he jerked his arm at the sound of the radio.

The man in the lead ship scratched his head like a man sorely puzzled. He barely had room in the tiny chamber. "All ships," he said. "What the hell did he mean by that?"

After a few moments someone suggested, "Code message." Others chorused agreement. Then someone asked, "Lew, does Earth have something called a retarder field?"

"I don't know. And we're beyond range of the Belt, except for masers." He sighed, for masers are always a chore to use. "Someone ask the Belt Coordinator about retarder fields."

XIII

With the first jarring clang of the alarm Garner was awake. He saw Anderson groan and open his eyes, but the eyes weren't seeing anything. "Meteor strike!" Garner bawled.

Anderson's eyes became aware. "Not funny," he said.

"No?"

"No. Are you the type who yells 'Red Alert' on a crowded slidewalk? What time is it?"

"Three hours four minutes." Garner looked out the window. "No Neptune. Why?"

"Just a sec." Anderson fooled with the attitude jets. The ship swung around . . . Neptune was a blue-green ball, dim in the faint light. Usually a planet that close is awe-inspiring, if not blinding. This world only looked terribly cold. "There it is. What'll I do with it?"

"Put us in a search orbit and start scanning with the radar. Can you set it to search for something as dense as dwarf star matter?"

"You mean, set it to search below the crust? Will do, Captain."

"Anderson?"

"Uh-huh?" He was already at work on the instrument board.

"You will remember that we have a time limit?"

Anderson grinned at him. "I can put this thing in a forced orbit and finish the search in five hours. Okay?"

"Great." Luke started punching for breakfast.

"There's just one thing. We'll be in free fall some of the time. Can you take it?"

"Sure."

Anderson moved in. When he finished the ship balanced nose down, one thousand miles above the surface, driving straight at the planet with a force of more or less one gee. The 'more or less' came from Anderson's constant readjustment.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Now don't worry," Anderson told him. "I'm trying to keep us out of the atmosphere, but if I do happen to land us in the soup all I have to do is turn off the motor. The motor is all that's holding us in this tight orbit. We'd fall straight up into outer space."

"So that's what a forced orbit is. How are you working the search?"

"Well, on a map it would look like I'm following the lines of longitude. I'll turn the ship sideways for a few minutes every time we cross a pole, so we can keep changing our line of search. We can't just let the planet turn under us. It would take almost sixteen hours."

The world rolled beneath them, one thousand miles below — more or less. There was faint banding of the atmosphere, but the predominant color was bluish white. Anderson kept the radar sweeping at and below the forward horizon, which on the radar screen looked like thin, banded air. It was solid rock.

"Understand, this is just to find out if it's *there*," Anderson said an hour later. "If we see a blob, we'll have it pinned within five hundred miles. That's all."

"That's all we need."

At nine hours Anderson turned the ship around, facing outward. He ached from shoulders to fingertips. "It's not there," he said wearily. "Now what?"

"Now we get ready for a fight. Get us headed for Nereid and turn off the drive."

The bright stars that were two fusion-drive space ships were too close to the tiny Sun to be easily the *Golden Circle*. But Greenberg's ship came steadily on. Garner and Anderson were on a ten-hour path to Nereid, Neptunes outermost moon. They watched as Greenberg's light grew brighter.

At nine thirty the light began to wiggle. Greenberg was maneuvering. "Do we start shooting?" Anderson wanted to know.

"I think not. Let's see where he's going."

They were on the night side of the planet. Greenberg was diving toward Neptune at a point near the twilight line. He was clearly visible.

"He's not coming to Nereid," said Anderson. They were both whispering, for some reason.

"Right. Either he left it on Triton, or it's in orbit. Could it be in orbit after that long?"

"Missile's tracking," Anderson whispered.

Greenberg was past Triton before he started to decelerate. "In orbit?" wondered Garner. "He must have been nuts."

Twenty minutes later Greenberg had put himself in a forced orbit around Neptune, and was covering a search pattern of the surface. "Now what?" Anderson asked.

"We wait and see. I give up, Anderson. I can't understand it."

"I *swear* it's not on Neptune."

"Uh, oh." Garner pointed. "Hail, hail, the gang's all here." A tiny spear of light was going by on the near side of the planet.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The blue-green ball was larger than he had anticipated. For the first time, he regretted his carelessness in not finding out more about the eighth planet when he had the chance, two billion years ago. He asked the pilot and co-pilot, who remembered that Neptune had 1.23 gee at surface. Earth gee, of course. For Kzanol it would be about one and a half.

The pilot was jockeying the ship into a search pattern.

Someone was already there.

It was the half-asleep free slave he'd passed at the halfway point. He was almost around the curve of the world, but he would be back in eighteen diltun or so. Kzanol had the pilot put the *Golden Circle* in orbit and turn off the motor. Let the slave do the searching.

The ship went by underneath, spitting fire at the stars. The slave was indeed marking out a search pattern. Kzanol let him go on.

And he wondered. How was he going to get down, on a motor which didn't have the power?

He let the pilot think about it, and the pilot told him. On rockets, wings and rams, all going at once. But even the pilot couldn't think of a way back up.

Kzanol/Greenberg, of course, had no warning at all. At its present setting his radar would have shown Kzanol's ship as more transparent than air. Even the planet itself was translucent. Kzanol/Greenberg kept watch over the radar screen, sure that if Masney missed the suit, he wouldn't.

"Why isn't the other ship searching too?" Anderson wondered. "It's just floating."

"Ordinarily," said Garner, thinking out loud, "I'd think they were in cahoots. There'd be no need for them both to search. But how—? Oh. I get it. The ET has taken control of Masney and Greenberg. Either that or he's letting them do his job for him without their knowing it."

"Wouldn't the job get done quicker if they both searched?"

"I'm beginning to wonder if this alien isn't the aristocrat's aristocrat. Maybe he thinks that anyone who works is a slave. Since he's a master . . . But the real question is, what are they searching for, and where is it?

"Look, son, why don't you warm up the radio and point the maser at our fleet of Beltmen? I might as well fill them in."

One thing about the Belt ships: at least the air plant could handle pipe tobacco smoke. The man in the third ship was the only man in the fleet who took advantage of the fact, one of exactly six in the entire Belt. He was known, not too affectionately, as Old Smoky.

Once he had been an Earthman. Now he was the only man in the fleet who could recognize Lucas Garner's voice. When the radio burst to life he listened carefully to the message, then called Lew to report that it really was Garner.

For Smoky, the broadcast removed all doubt. It was Garner

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

himself. The old man was not above a judicious lie, but he was not prone to risk his life. If he was near Neptune in a leaky Terran boat, he must have an outstanding reason for being there.

Thoughtfully Old Smoky checked through his arsenal of two radar missiles, one heat seeker, and a short-range laser "cannon". The war of the worlds was here at last . . .

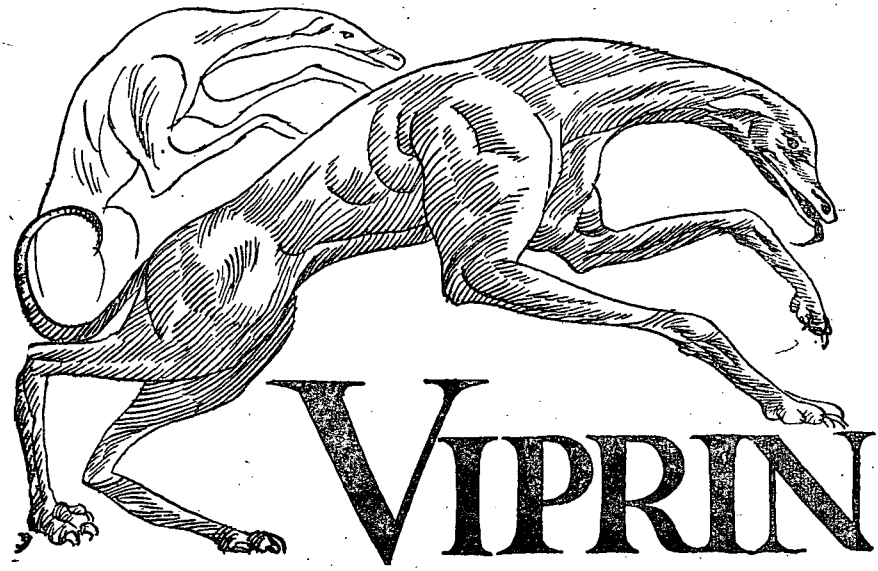
Kzanol was baffled. After six hours of searching, the slave Masney had covered the entire planet. The suit wasn't there!

He let the slave begin his second search, for the sake of thoroughness. He took his own ship to Triton.

The Brain could not compute the course of moons; one of them might have gotten in the way of the ship as it dove toward Neptune. Very likely it had been Triton. That moon was not only closer than Nereid, it was far bigger: 2500 miles thick as compared to 200.

A nerve-racking hour later, an hour of flying upside down over Triton's surface with the jet firing moon showing flat overhead, Kzanol admitted defeat. No white flash had shown itself on the radar screen, though Neptune itself had shown through the transparent image of the big moon. He turned his attention to the small moon.

"So that's it!" Anderson's face glowed. "They thought it was on the surface and it wasn't. Now



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

they don't know *where* it is!" He thought a moment. "Shouldn't we get out of here? The honeymooner's aiming itself at Nereid, and we're too close for comfort."

"Right," said Garner. "But first turn the missile loose. The one that's homed on the alien. We can worry about Greenberg later."

"I hate to do it. There're two other people on the *Golden Circle.*" A moment passed. Lengthened. "I can't move," said Anderson. "It's that third button under the blue light."

But Garner couldn't move either.

"Who'd have thought he could reach this far?" he wondered bitterly. Anderson couldn't help but agree. The ship continued to fall toward Nereid.

To the Power, distance was of little importance. What mattered was numbers.

Nereid was a bust. The deep radar went through it as through a warped window pane, and showed nothing. Kzanol gave it up and watched the half-asleep slave for awhile. His tiny flame burned bravely against the Neptunian night.

Kzanol was in a bad state of mind. It seemed now that his ship had missed not only Neptune but both its moons. What could have gone wrong with the Brain? Well, it probably had never been intended to last three hundred years. The ship must have hurtled through the solar system and gone on into interstellar space, at .97 light. It would be beyond Andromeda by now. He shivered.

All in all, the only pleasure he had was to watch the last ship searching Neptune for the third time — and to see its bright flame suddenly lengthen, then shorten again. The sleepy slave had given up.

After a few minutes Kzanol knew that he too was going to Triton. A feeling of noble pity came over him, and he remembered the tradition that the family of Racarliw had never mistreated a slave. Kzanol went to meet the sleeper at Triton.

"One . . . two . . . I can't see Garner's ship. He must have landed somewhere, or turned off his drive. The others are just milling around."

"Funny he hasn't called us. I hope nothing's happened to him."

"We'd have seen the explosion, Smoky. Anyway, he was going for Nereid when his drive stopped. If it failed, we can find him later."

XIV

When Kzanol was close enough, he told the sleeper to turn ship and join him. In an hour he and the sleeper were alongside.

Kzanol's pilot and co-pilot were worried about the fuel situation, so as soon as the sleeper's ship was close enough Kzanol told him to transfer his fuel to the *Golden Circle.* He waited while various clanking and banging sounds rang through the ships. Fortunately the cards were magnetized, and there was webbing to hold him in his seat. He followed the movements

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of his three personal slaves with the back of his mind: the sleeper near the tail, the pilot and co-pilot in the cockpit. Naturally he jumped like a terrified gazelle when his airlock door swung open and a slave walked in.

A slave with a mind shield.

"Hi!" it said, incomprehensibly in English. "I guess we'll need a translator." And it coolly walked forward to the control room. At the door it stopped and gestured — with Kzanol's disintegrator.

The co-pilot sat motionless listening to Kzanol/Greenberg's side of the conversation. He couldn't understand overtalk, but Kzanol/Greenberg could; and Kzanol listened to the shielded slave through the mind of the co-pilot.

"I ought to get rid of you right away," Kzanol mused. "A slave which can't be controlled can't be trusted."

"That's truer than you know, but you can't kill me yet. I happen to have some information that you need."

"So? Like what?"

"I know where the spare suit is. I also know why we weren't picked up, and I know where the rrgh — where our race is now."

Kzanol said, "I think I also know where the second suit is. But for whatever else you may know, I won't kill you."

"Big of you." Kzanol/Greenberg waved the disintegrator negligently. "I'll tell you something you can't use for first. Did you know the whitefoods are intelligent?"

"Whitefood droppings! Nonsense."

"Humans have found them on Sirius III-A. They're definitely whitefoods. They're also definitely sentient. Can you think of any way they could have developed intelligence?"

"No."

"Of course not. If any form of life has ever been mutation-proof, it's the whitefoods. Besides, what does a herbivore with no manipulatory appendages, and no national defenses except sentient herders to kill off natural enemies, want with intelligence? No, the tnuctipun must have made them sentient in the first place. Making the brains a delicacy was just an excuse for making them large."

Kzanol sat down. His mouth tendrils stood straight out, as if he were smelling with them. "Why should they do that?"

He was hooked.

"Let me give it to you all in one bundle," said Kzanol/Greenberg. He took off his helmet and sat, found and lighted a cigarette, taking his time, while Kzanol grew silently but visibly enraged. There was no reason why he shouldn't get angry, Kzanol/Greenberg thought, as long as he didn't get *too* angry.

"All right," Kzanol/Greenberg began. "First point is the sentient whitefoods. Second point. You remember that there was a depression when Plorn's tnuctipun came up with antigravity."

"Powerloss, yes?" said Kzanol fervently — and untactfully. "He should have been assassinated."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Not him. His tunctipun. Don't you see? They were fighting an undeclared war even then. The free tnuctipun must have been behind it all the time, the tnuctip fleet that fled into space when Thrintun found the tnuctipun system. A few civilized tnuctipun took their orders. The whitefoods were their spies; half the nobles in the galaxy, everyone who could afford it, used to keep whitefoods on their land."

"You're a ptavv fool! You're basing all these suppositions on the silly idea that whitefoods are intelligent. That's nonsense. We'd have sensed it."

"No. Check with Masney if you don't believe me. Somehow the tnuctipun must have designed a whitefood brain that was immune to the Power. And that one fact makes it certain that the whole ploy was deliberate. The whitefood spies. The antigravity, released to cause a depression. Maybe there were other ideas, too. Mutated racing viprin were introduced right after antigravity; it put all the legitimate viprin ranches out of business, made the depression worse. The sunflowers were usually the only defense for a plantation, and everyone who had land had a sunflower border. It got the landowners used to isolation, so that they might not cooperate in wartime. I'd give odds the tnuctipun had a spray to kill sunflowers. When the depression was in full swing they struck."

Kzanol didn't speak. His expression was hard to read.

"This isn't all supposition. I've got solid facts. First, the bandersnatchi, whitefoods to us, are sentient. Humans aren't stupid; they wouldn't make a mistake like that. Second, it's a fact that you weren't picked up when you hit Earth. Why?"

"That is an ingesting good question. Why?"

This was the starting point, the hurt that had rankled in Kzanol/Greenberg's breast for sixteen days during which he had had nothing to do but supervise Masney and brood on his bad luck. He could have been spared all of this, the lostness and the loneliness and the deadly danger, if only that fool of a caretaker had seen the flash. But he hadn't, and there could be only one reason.

"Because there wasn't anyone on the moon! Either the caretake was killed in the revolt, or he was off fighting somewhere. Probably he was dead. The tnuctipun would have moved to cut off our food."

"To what?" Kzanol was clearly lost. Thrintun had never fought anything but other thrintun, and the last war had been fought before star travel. Kzanol knew nothing of war.

Kzanol tried to get back to basics. "You said you could tell me where the thrintun are now."

"With the tnuctipun. They're dead, extinct. If they weren't dead they would have reached Earth by now. That goes for the tnuctipun too, and nearly every other species that served us."

"But that's insane. Somebody has to win a war!"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He sounded so sincere that Kzanol/Greenberg laughed. "Not so. Ask a human. He'll think you're an idiot for needing to, but he'll be happy to tell you. Shall I tell you what may have happened?"

He didn't wait for an answer. "This is pure conjecture, but it makes sense to me, and I've had two weeks to think about it. We must have been losing the war. If we were, some thraargh — excuse me. Some members of our race must have decided to take all the slaves with us. Like Grandfather's funeral ceremony, but bigger. He made an amplifier helmet strong enough to reach the entire galaxy. Then he ordered everyone within reach to commit suicide."

"But that's a horrible attitude!" Kzanol bristled with moral outrage. "Why would a thrint do a thing like that?"

"Ask a human. He knows what sentients are capable of when someone threatens them with death. First they declaim that the whole thing is horribly immoral, and that it's unthinkable that the threat would ever be carried out. Then they reveal that they have similar plans, better in every respect, and have had them for years, decades, centuries. You admit the Big Amplifier was technically feasible?"

"Of course."

"Do you doubt that a slave race in revolt would settle for nothing less than our total extinction?"

The tendrils writhed in battle at the corners of Kzanol's mouth. "I don't doubt it."

"Then—"

"Certainly we'd take them with us into extinction! The sneaky, dishonorable lower-than-whitefoods, using our concessions of freedom to destroy us! I only desire that we got them all."

Kzanol/Greenberg grinned. "We must have. How else can we explain that *none* of our slaves are in evidence except whitefoods? Remember whitefoods are immune to the Power.

"Now, that other information. Have you looked for your second suit?"

Kzanol returned to the present. "Yes, on the moons. And you searched Neptune. I'd have known if Masney found it. Still, there's one more place I'd like to search."

"Go ahead. Let me know when you're finished."

Gyros hummed faintly as the *Golden Circle* swung around. Kzanol looked straight ahead, his Attention in the control room. Kzanol/Greenberg lit a cigarette and got ready for a wait.

If Kzanol had learned patience, so had his poor man's imitation. Otherwise he would have done something foolish when the thrint blithely took over Masney, his own personal slave. He could have killed the thrint merely for using his own body — Kzanol/Greenberg's own stolen body, by every test of memory. And the effort of dealing with Kzanol, face to his own face!

But he had no choice.

The remarkable thing was that he was succeeding. He faced a full grown thrint on the thrint's own territory. He had gone a long way

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

as another thrint mind, a ptavv at least. Kzanol still might kill him; he wished that the thrint would pay some attention to the disintegrator! But he had done well so far. And was proud of himself, which was all to the good.

There was no more to be done now. He had better stay out of Kzanol's way for a while.

XV

Kzanol's first move was to radar Kzanol/Greenberg's ship. When that failed to turn up the suit, Kzanol took over Masney again and made him search it from radar cone to exhaust cone, checking the assumption that the shielded slave had somehow sneaked the suit aboard and turned off the stasis field. He found nothing.

But the other seemed so sure of himself!

They searched Triton again. Kzanol/Greenberg could see Kzanol's uncertainty growing as the search progressed. The suit wasn't on Neptune, wasn't on either moon, positively wasn't on the other ship, couldn't have stayed in orbit this long. Where was it?

The drive went off. Kzanol turned to face his tormentor, who suddenly felt as if his brain were being squeezed flat. Kzanol was giving it everything he had: screaming sense and gibberish, orders and rage and red hate, and question, question, question. The pilot moaned and covered his head. The copilot squealed, stood up and turned half around, and died with foam on her lips. She stood there, dead, with only the magnets in her sandals to keep her from floating away. Kzanol/Greenberg faced the thrint as he would have faced a tornado.

The mental tornado ended. "Where is it?" asked Kzanol.

"Let's make a deal."

Kzanol took out his variable-knife. He treated the disintegrator with supreme disregard. Perhaps he didn't think of it as a weapon. Anyway, nothing uses a weapon on a thrint except another thrint. He opened the variable-knife to eight feet and stood ready to wave the invisibly thin blade through the rebellious sentient's body.

"I dare you," said Kzanol/Greenberg. He didn't bother to raise the disintegrator.

GET OUT, Kzanol told the pilot. Kzanol/Greenberg could have shouted. He'd won! Slaves may not be present at a battle, or squabble, between thrint and thrint.

The pilot moved slowly toward the airlock. Either some motor area had been burned out in the mind fight, or the slave was reluctant to leave. Kzanol probed and saw what the slave wanted.

ALL RIGHT. BUT HURRY.

Very quickly, the pilot climbed into his spacesuit before leaving. The family of Racarliw had never mistreated a slave . . .

The airlock door swung shut. Kzanol asked, "What kind of deal?"

"I want a partnership share in control of Earth. Our agreement is not to be invalidated if we find other, uh, beings like you, or a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

government of same. Half to you, half to me, and your full help in building me an amplifier. You'd better have the first helmet. I want your oath, your . . . Wait a minute, I can't pronounce it." He picked up a bridge sheet and wrote, 'prtuuvl', in the dots and curlicues of overspeak. "I want you to swear that oath that you will protect my half ownership to the best of your ability, and that you will never willingly jeopardize my life or health, provided that I take you to where you can find the second suit. Also that we get Earthmen to build me another amplifier, once we get back."

Kzanol thought for a full minute. His mental shield was as solid as the door on a lunar fort, but Kzanol/Greenberg could guess his thoughts well enough. He was stalling for effect. Certainly he had decided to give the oath; for the prtuuvl oath was for use between thrint and thrint. Kzanol need only regard him as a slave . . .

"All right," said Kzanol. And he gave the prtuuvl oath, without missing a single syllable.

"Good," Kzanol/Greenberg approved. "Now swear me the same thing, by *this* oath." He pulled a bridge sheet from his breast pocket and passed it over. Kzanol took it and looked.

"You want me to swear a kpitlithtulm oath *too*?"

"Yes." There was no need to spell it out for Kzanol. The kpitlithtulm oath was for use between thrint and slave. If he swore the kpitlithtulm oath and the prtuuvl oath he would be committed, unless he chose to regard Kzanol/Greenberg as a plant or a dumb animal. Which would be dishonorable.

Kzanol dropped the paper. His mind shield was almost flickering, it was so rigid. Then his jaws pulled back from the fangs in a smile more terrible than Tyrranosaurus Rex chasing a paleontologist, or Lucas Garner hearing a good joke. Seeing Kzanol now, who could doubt that this was a carnivore? A ravenous carnivore which intended to be fed at any moment. One might forget that Kzanol was half as big as a man, and see that he was larger than one hundred scorpions or three wildcats or a horde of marching soldier ants.

But Kzanol/Greenberg saw it as a smile of rueful admiration, a laughing surrender to a superior adversary; the smile of a good loser. With his thrint memories he saw further than that. The smile was as phony as a brass transistor.

Kzanol gave the oath four times, and made four invalidating technical mistakes. The fifth time he gave up and swore according to protocol.

"All right," said Kzanol/Greenberg. "Have the pilot take us to Pluto."

"A-a-all right, everybody turn ship and head for three, eighty-four, twenty-one." The man in the lead ship sounded wearily patient. "I don't know what the game is, but we can play just as good as any kid on the block."

"Pluto," said someone. "He's going to Pluto!"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Old Smoky Petropoulos thumbed the transmitter. "Lew, hadn't one of us better stop and find out what's with the other two ships?"

"Uh. Okay, Smoky, you do it. Can you find us later with a maser?"

"Sure, boss. No secrets?"

"Hell, they know we're following them. Tell us anything we need to know. And find out where Garner is! If he's in the honeymooner I want to know it. Better beam Number Six too, and tell him to go wherever Garner is."

"Of course, Pluto. Don't you get it yet?" Reluctantly, Kzanol/Greenberg began to worry about his former self's intelligence. He'd been afraid Kzanol would figure it out for himself. But —?

"No," said Kzanol, glowering.

"The ship hit one of Neptune's moons," Kzanol/Greenberg explained patiently, "so hard that the moon was smacked out of orbit. Power, the ship was moving at almost light-speed! The moon picked up enough energy to become a planet, but it was left with an eccentric orbit which takes it inside Neptune at times. Naturally that made it easy to spot."

"I was told that Pluto came from some other solar system."

"So was I. But that doesn't make sense. If that mass dived into the system from outside, why didn't it go right back out again? Well, I'm taking a gamble.

"There's only one thing that bothers me. Pluto isn't very big. Do you suppose the suit may have been blown back into space by the explosion when it hit?"

"If it was, I'll kill you," said Kzanol.

"Don't tell me, let me guess," Garner begged. "Aha! I've got it. Smoky Petropoulos. How are you?"

"Not as good as your memory. It's been twelve years." Smoky stood behind the two chairs, in the airlock space, and grinned at the windshield reflection of the two men. There wasn't room to do much else. "How the hell are you, Garner? Why don't you turn around and shake hands with an old buddy?"

"I can't, Smoky. I've been ordered not to move by a BEM that doesn't take No for an answer. Probably a good hypnotherapist could get us out of this fix, but we'll have to wait 'till then. By the way, meet Leroy Anderson."

"Hi." "Hi."

"Now give us a couple of cigarettes, Smoky, and put them in the corner of our mouths so we can talk. Are your boys chasing Greenberg and the BEM?"

"Yeah." Smoky fumbled with cigarettes and a lighter. "Just what is this game of musical chairs?"

"What do you mean?"

Old Smoky put their cigarettes where they belonged. He said, "That honeymoon special took off for Pluto. Why?"

"Pluto!"

"Surprised?"

"It wasn't here." said Anderson

"Right," said Garner. "We know what they're after, and we know

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

now they didn't find it around here. But I can't imagine why they think it's on Pluto. Oops! Hold it." Garner puffed furiously at his cigarette. He didn't seem to have any trouble moving his face. "Pluto may have been a moon of Neptune once. Maybe that's it. How about Greenberg's ship? Is it going in the same direction?"

"Uh-uh. Wherever it is, its drive is off. We lost sight of it four hours ago."

Anderson spoke up. "If your friend is still aboard he could be in trouble."

"Right," said Garner. "Smoky, that ship could be falling into Neptune with Lloyd Masney aboard. You remember him? A big, broad guy."

"I think so. Is he paralyzed too?"

"He's hypnotised. Plain old garden-variety hypnotised, and if he hasn't been told to save himself he won't. Will you?"

"Sure. I'll bring him back here." Smoky turned to the airlock.

"Hey!" Garner yelped. "Take the butts out of our mouths before our faces catch fire!"

From his own ship Smoky called Woody Atwood in Number Six, the radar-proof ship, and told his story. "I think it's the truth, Woody," he finished. "But there's no point taking chances. You get in here and stick close to Garner's ship; if he makes a single move he's a bloody liar, so keep an eye open. He's been known to be tricky. I'll see if Masney is really in trouble. He shouldn't be hard to find."

"Pluto's a week and a half away at one gravity," said Anderson, who could do simple computation in his head. "But we couldn't follow the gang even if we could move. We don't have the fuel."

"We could refuel on Titan, couldn't we? Where the hell is Smoky?"

"Better not expect him back today."

Garner growled at him. Space, free face, paralysis and defeat were all wearing away at his self control.

"Hey," he whispered suddenly.

"What?" The word came in an exaggerated stage whisper.

"I can wiggle my index fingers," Garner snapped. "This hex may be wearing off. And mind your manners."

Number Six, invisible to radar, hovered near the *Heinlein*, patiently waiting for Garner to make a move.

Smoky was back late the next day. He had inserted the pointed nose of his ship into Masney's drive tube to push Masney's ship. When he turned off his own drive the two ships tumbled freely. Smoky moved between ships with a jet pack in the small of his back. By this time Atwood had joined the little group; for it would have been foolish to suspect trickery after finding Masney.

Not because Masney was still hypnotised. He wasn't. Kzanol had freed him from hypnosis in the process of taking him over, and had kindly left him with no orders when he left for Pluto. But Masney was near starvation. His face had deep

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

wrinkles of excess skin, and the skin of his torso was a loose, floppy, folded tent over his rib cage. Kzanol/Greenberg had forgotten to feed him for a little more than two weeks, and had given him water only when his thirst seemed about to break him out of hypnosis. Kzanol would never have treated a slave that way; but Kzanol, the real Kzanol, was far more telepathic than the false.

Masney had started an eating spree as soon as the *Golden Circle* was gone, but it would be some time before he was 'stocky' again. His ship's fuel was gone, and he had been drifting a highly eccentric orbit around Triton.

"Couldn't possibly be faked," Smoky said when he called the Belt fleet. "A little bit better fakery, and Masney would be dead. As it is he's only sick."

Now the four ships fell near Nereid.

"We've got to refuel all these ships," said Garner. "And there's only one way to do it." He began to tell them.

Smoky howled. "I won't leave my ship!"

"Sorry, Smoky. See if you can follow this. We've got three pilots, right? You, Woody, Masney. Anderson and me are paralyzed. But we've got four ships. We have to leave one."

"Sure, but why mine?"

"Five men to carry. That means we keep both two-man ships. Right?"

"Right."

"We give up your ship, or we give up a radar-proof ship. Which would you leave?"

"You don't think we'll get to Pluto in time for the war?" Smoky asked.

"We might as well try."

"All right, all right!"

The fleet moved to Triton without Number Four, and with half of Number Four's fuel in Masney's ship. Garner was Masney's passenger, and Smoky was in the *Heinlein* with Anderson. The three ships hovered over the icy surface while their drives melted through layer after thick layer of frozen gasses, nitrogen and oxygen and carbon dioxide, until they reached water. They landed on water ice, each in its own shallow cone. Then Woody and Smoky went after Number Four.

They used the tank of Number Four to hold and heat water ice chipped from the landing area, and they used the battery from Number Six to electrolyze the melted water. Hydrogen and oxygen, mixed, poured into the *Heinlein's* tank. They set the tank thermostat above the condensation point of hydrogen; but the oxygen fell as snow, and Smoky stood in the bottom of the tank and shoveled the snow out. In two days they had fueled all three ships. Number Four was useless, her tank clogged with dirt.

"We'll be two days late for whatever happens," Woody said glumly. "Why go at all?"

"We can stay close enough for radio contact," argued Smoky. "I'd like to have Garner close enough

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to tell the fleet what to do. He knows more about the Bug Eyed Monsters than any of us."

Garner said, "Main argument is that it may take the fleet two days to lose. Then we get there and save the day. Or we don't. Let's go."

Woody Atwood masered the fleet immediately, knowing that the others could not intercept the conversation. If they had moved into the maser beam their radios would have blown sky high.

XVI

"Matchsticks!" Kzanol's voice was heavy with thrintun contempt. "We might just as well be playing solitaire." It was a strange thing to say, considering that he was losing.

"Tell you what," suggested Kanzol/Greenberg. "We could divide the Earth up now and then play for people. We'd get about four billion each to play with. In fact, we could agree right now that the Earth should be divided by two north-south great circle lines, leave it at that 'till we get back, and play from four billion each."

"Sounds all right. Why north-south?"

"So we each get all the choices of climates there are. Why not?"

"All right." Kzanol dealt two cards face down and one up. "Seven-card stud," announced the pilot.

"Fold," said Kzanol/Greenberg, and watched Kzanol snarl and rake in the antes. "We should have brought Masney," he mused. "It might be dangerous, not having a pilot."

"So? Assume I'd brought Masney. How would you feel watching me operate your former slave?"

"Lousy,"" In point of fact, he now realized, Kzanol had shown rare tact in leaving Lloyd behind. Lloyd was a used slave, one who had been owned by another. Tradition almost demanded his death, and certainly demanded that he never be used by a thrint with self-respect, though he might be given to a beggar.

"Five stud," said the pilot. He sat where he could see either hand, ready to wrap his human tongue around human, untranslatable poker slang when Kzanol wished to speak, and ready to translate for Kzanol/Greenberg. Kzanol dealt one up, one down.

"That's funny," said Kzanol/Greenberg. "I almost remembered something, but then it slipped away."

"Open your mind and I'll tell you what it was."

"No. It's in English anyway. From the Greenberg memories." He clutched his head. "What is it? It seemed so damned appropriate. Something about Masney."

"Play."

"Five people."

"Raise five."

"Up ten."

"Call. Greenberg, why is it that you win more than I do even though you fold more often?"

Kzanol/Greenberg snapped his fingers. "Got it! 'When I am grown to man's estate I shall be very

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

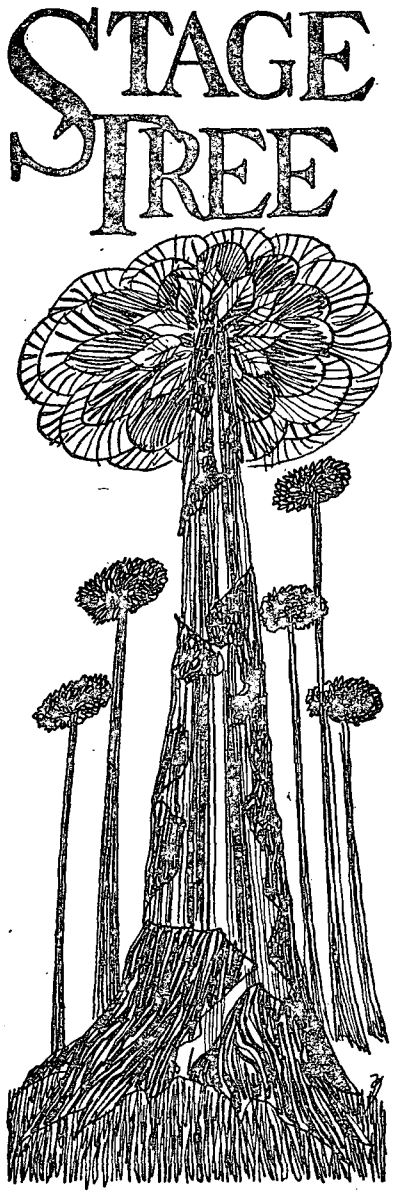
proud and great. And tell the other girls and boys Not to meddle with my toys.' " He laughed. "Now what made me . . ."

"Deuce for you, queen for me," said the pilot. Kzanol continued in thrintun, "If men had telepathic recorders they wouldn't have to meddle with sounds that way. It has a nice beat, though."

"Sure," Kzanol/Greenberg said absently. He lost that hand, betting almost two hundred people on a pair of fours.

Somewhat later Kzanol looked up from the game. "Communicator," he said. He got up and went to the pilot room. Kzanol/Greenberg followed. They took seats next to the pilot room door and the pilot turned up the volume.

". . . Atwood in Number Six. I hope you're listening, Lew. There is definitely an ET on the honeymooner, and he definitely has wild talents. There's nothing phony about any of this. The alien paralyzed the Arm and his chauffeur from a distance of around a million miles. He's pretty callous, too. The man in the second ship was left drifting near Triton, half starved and without fuel, after the alien was through with him. Garner says that one of the men, human, on the honeymooner also thinks he's an alien, though I'm not too clear on that, and he was the one who starved Masney. There are two other humans on the honeymooner, the pilot and copilot. Garner says shoot on sight, don't even come near him. I leave that to you. We're two days behind you, but we're coming any-



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

way. Number Four is on Triton, with no fuel, and we can't use it until we clean the mud out of it. Only three of us can fly. Garner and his chauffeur are still paralyzed, though it's wearing off a little. We should have a hypnopsychiatrist for these Earthies, or they may never walk again.

"I'm putting this on repeat.

"Lew, this is Atwood in Number Six. Repeat, this is Atwood . . ."

Kzanol/Greenberg pulled a cigarette and lit it. The honeymooner had a wide selection; this one was double filtered, mentholated, and made from de-nicotined tobaccos. It smelled like gently burning leaves and tasted like menthol. "Shoot on sight," he repeated. "That's not good."

The thrint looked at him with undisguised contempt. To fear a slave —! But then, it was only a ptavv itself.

Kzanol/Greenberg glared. He knew more about people than Kzanol did, after all.

"We can't shoot yet," said the man in the lead ship. "We'll have to wait 'til they turn around."

Nobody asked a question. They had just watched, through a camera in its nose, as a test missile approached the *Gold Circle*. They had seen the glare of the honeymooner's drive become blinding, even with the camera picture turned all the way down. Then the screens had gone blank. The fusing hydrogen turned missiles to molten slag before they could get close enough to be effective.

Kzanol/Greenberg reached a decision. "Hold the fort," he said. "I'll be right back."

Kzanol watched him get up and pull on his spacesuit. "What are you doing?"

"Slowing down the opposition, if I'm lucky." The near-ptavv went up the ladder into the airlock.

Kzanol sighed, pocketed the one-man matchsticks of the ant, and shuffled for solitaire. He knew that the slave with the ptavv mind was making a tremendous fuss over nothing. Perhaps it had brooded too long on the hypothetical tnuctip revolt, until all slaves looked dangerous.

Kzanol/Greenberg emerged on the dorsal surface of the hull. There were a number of good reasons for putting the airlock there, the best being that the drive could be left on while men walked on the hull. He put his magnet sandals on, because it would be a long fall if he slipped, and walked quickly aft to the tail. A switch buried in the vertical fin released a line of steps leading down the curve of the hull to the wing. He climbed down. The hydrogen light was terribly bright; even with his eyes covered he could feel the heat falling on his face. When he knelt on the trailing edge he was shielded from the light.

He peered over the edge. If he leaned too far he would be blinded, but he had to go far enough to see . . . Yes, there they were. Five points of light, equally bright, all the same color. Kzanol/Greenberg dropped the nose of the disintegrator over the edge and fired.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

If the disintegrator had had a maser type of beam, it could have done some real damage. But then, he could never have hit any of those tiny targets with such a narrow beam. Still, the cone spread too rapidly. Kzanol/Greenberg couldn't see any effect. He hadn't really expected to. He held the digger pointed as best he could at the five stars. The minutes ticked by.

"What the hell . . . Lew! Are we in a dust cloud?"

"No." The man in the lead ship looked anxiously at the frosted quartz of his windshield. "Not that our instruments can tell. This may be the weapon Garner told us about. Does everyone have a messed-up windshield?"

A chorus of affirmatives.

"Huh! Okay. We don't know how much power there is in that machine, but it may have a limit. Here's what we'll do. First, we let the instruments carry us for awhile. Second, we're eventually going to break our windshields so we can see out, so we'll be going the rest of the way in closed suits. But we can't do that yet! Otherwise our faceplates will frost up. Third point." He glared around for emphasis, though nobody saw him. "Nobody go outside for any reason! For all we know, that gun can peel our suits off our backs in ten seconds. Any other suggestions?"

There were.

"Call Garner and ask him for ideas." Mabel Griffin in Number Two did that.

"Withdraw our radar antennae for a few hours. Otherwise they'll disappear." The ships flew blind.

"We need something to tell us how far this gun has dug into our ship." But nobody could think of anything better than Go Look Later.

Every minute someone tested the barrage with a piece of quartz stuck out the airlock. The barrage stopped sixteen minutes after it started. Two minutes later it started again.

Kzanol looked up to see his 'partner' climbing wearily down through the airlock. "Very good," he said. "Has it occurred to you that we may need the disintegrator to dig up the spare suit?"

"Yeah, it has. That's why I didn't use it any longer than I did." In fact he'd quit because he was tired, but he knew Kzanol was right. Twenty-five minutes of almost continuous operation was a heavy drain on the battery. "I thought I could do them some damage. I don't know whether I did or not."

"Will you relax? If they get too close I'll take them and get us some extra ships and body servants."

"I'm sure of that. But they don't have to get that close to kill us."

XVII

The gap between the *Circle* and the Belt fleet closed slowly. They would reach Pluto at about the same time, eleven days after the honeymooner had left Neptune.

"There she goes," said somebody.

"Right," said Lew. "Everyone ready to fire?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Nobody answered. The flame of the honeymooner's drive stretched miles into space, a long, thin line of bluish white fire. Slowly it began to contract.

"Fire," said Lew, and pushed a red button. It had a tiny protective hatch over it, now unlocked. With a key.

Five missiles streaked away, dwindling match flames. The honeymooner's fire had contracted to a point.

Minutes passed. An hour. Two.

The radio beeped. "Garner calling. You haven't called. Hasn't anything happened yet?"

"No," said Lew into the seperate maser mike. "They should have hit by now."

Minutes dragging by. The white star of the honeymoon special burned serenely.

"Then something's gone wrong." Garner's voice had crossed the light minutes between him and the fleet. "Maybe the disintegrator burned off the radar antennae on your missiles."

"God damn! Sure, that's exactly, what happened. Now what?"

Minutes.

"Our missiles are okay. If we can get close enough we can use them. But that gives them two days to find the amplifier. Can you think of any way to hold them off for two days?"

"Yeah." Lew was grim. "I've an idea they won't be landing on Pluto." He gnawled his lip, wondering if he could avoid giving Garner this information. Well, it wasn't exactly top secret, and the Arm would probably find out anyway. "The Belt has made two trips to Pluto, but we never tried to land there. Not after the first ship took a close-up spectroscopic reading . . ."

They played at a table just outside the pilot room door. Kzanol/Greenberg had insisted; he played with one ear cocked at the radio. Which was all right with Kzanol. It affected the other's playing.

Garner's voice came, scratchy and slightly distorted, after minutes of silence.

"It sounds to me as if it all depends on where they land. We can't control that. We'd better think of something else, just in case. What have you got besides missiles?" he asked.

The radio buzzed gently with star static.

"I wish we could hear both sides," growled Kzanol. "Can you make any sense of that?"

Kzanol/Greenberg shook his head. "We won't. They must know we're in Garner's maser beam. But it sounds like they know something we don't."

"Four cards."

"I'm taking two. Anyway, it's nice to know they can't shoot us."

"Yes. Well done." Kzanol spoke with absent-minded authority, using the overspeak phrase for congratulating a slave who shows proper initiative. Kzanol/Greenberg's self control fought his fury until it turned cold; and Kzanol never knew how close he had come to a death-battle.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Ten days, twenty-one hours since takeoff. The icy planet hung overhead, huge and dirty white, with the glaring highlight which had fooled early astronomers. From Earth only that bright highlight is visible, actually evidence of Pluto's flat, almost polished surface, making the planet look very small and very dense.

"Pretty puny," said Kzanol.

"What did you expect of a moon?"

"There was F-28. Too heavy even for whitefoods."

"True. Mmph. Look at that big circle. Looks like a tremendous meteor, doesn't it?"

"Where? Oh, I see it." He listened. "That's it! Radar's got it cold. Powerloss," he added, looking at the scope through the pilot's eyes, "you can almost see the *shape* of it. But we'll have to wait for the next circuit before we can land."

Slowly the ship turned until its motor faced forward in its orbit.

The Belt fleet stayed a respectful distance away. Very respectful; four million miles respectful. Without the telescopes Pluto barely showed a disk.

"Everybody guess a number," said Lew. "Between one and one hundred. When I get yours I'll tell you mine. Then we call Garner and let him pick. Whoever gets closest to Garner's number is It."

"Three." "Twenty-eight." "Seventy."

"Fifty. Okay. I'll call Garner." Lew changed to maser. "One calling Garner. One calling Garner. Garner, we've about decided what to do if he doesn't go down. None of our ship radars are damaged, so we'll just program one ship to aim for the honemooner at top speed. We watch with telescopes. When our ship gets close enough we blow the drive. We want you to pick a number between one and one hundred."

Seconds passing. The other fleet was closer now, nearing the end of the trip.

"This is Number Three. He's going down."

"Garner here. I suggest we wait and use the radar-proof, if we can. We may be able to fit in an extra man until we can get back to Triton. You still want a number? Fifty-five."

Lew swallowed. "Thanks, Garner." He turned off his maser/finder.

"Three again. You're saved by the bell, Lew. He's going down on the night side. In the predawn area. Couldn't be better. He may even land in the Crescent!"

Lew watched, his face pale, as the tiny light burned above Pluto's dim white surface. He did not relish the idea of spending several weeks riding on the outside of a spaceship.

Kzanol/Greenberg swallowed, swallowed again. The low acceleration bothered him; he blamed it on his human body. He sat in a window seat with the crash web tightly fastened, looking out and down.

There was little to see. The ship had circled half the world, falling ever lower, but the only feature on

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

an unchanging cue-ball surface had been the slow creep of the planetary shadow. Now the ship flew over the night side, and the only light was the dim light of the drive, dim at least from this height. And there was nothing to see at all . . . until now.

Something was rising on the eastern horizon, something a shade lighter than the black plain. An irregular line against the stars. Kzanol/Greenberg leaned forward as he began to realize just how big the range was; for it couldn't be anything but a mountain range. "What's that?" he wondered aloud.

"One hundredth-diltun." Kzanol probed the pilots mind. The pilot said, "Cott's Crescent. Frozen hydrogen piled up along the dawn side of the planet. As it rotates into daylight the hydrogen boils and then refreezes on the night side. Eventually it winds up back here."

"Oh. Thanks."

Evanescent mountains of hydrogen snow, smooth and low, like a tray of different-sized snowballs dropped from a height. They rose gently before the slowing ship, rank behind rank, showing the tremendous breadth of the range. But they couldn't show its length. Kzanol/Greenberg could see only that the mountains stretched half around the horizon; but he could imagine them marching from pole to pole around the curve of the world. As they must. As they did.

The ship was almost down, hovering motionless a few miles west of the beginning of the Crescent. A pillar of fire licked a mile down to touch the surface. Where it touched, the surface disappeared. A wide, shallow crater formed below the descending ship. It became rapidly deeper. A ring of fog formed, soft and white and opaque, closing in on the ship. Then there was nothing but the lit fog and the crater and the licking fusion fire.

This was the most alien place. He had been wasting his life searching out the inhabited worlds of the galaxy; for never had they given him such a flavor of strangeness as came from this icy world, colder than . . . than the bottom of Dante's Hell.

"We'll be landing on the water-ice layer," explained the pilot, just as if he'd been asked. He had. "The gas layers wouldn't hold us. But first we have to dig down."

The crater looked like an open pit mine, with a sloping ring wall and then an almost flat rim and then another, deeper ring wall and . . .

Kzanol/Greenberg looked down, grinning and squinting against the glare, trying to guess which layer was which gas. They had been drilling through a very thick blanket of ice, hundreds or thousands of feet thick. Perhaps it was nitrogen? Then the next layer, appearing now, would be oxygen.

The plain and the space above it exploded in flame.

"She blows!" Lew crowed, like a felon reprieved. A towering, twisting pillar of yellow and blue flame roared straight up out of the telescope, out of the pale plain where there had been the small white star of the *Golden Circle*. For a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

moment the star shone brightly through the flames. Then it was swamped, and the whole scope was fire. Lew dropped the magnification by a ten-factor to watch the fire spread. Then he had to drop it again. And again.

Pluto was on fire!

For billions of years a thick blanket of relatively inert nitrogen ice had protected the highly reactive layers below. There had been no combustion on Pluto since Kzanol's spaceship smashed down from the stars. But now there was hydrogen vapor mixing with oxygen vapor, and they burned. Other elements burned too.

The fire spread outward in a circle. A strong, hot wind blew out and up into vacuum, fanning great sheets of flame over the boiling ices until the raw oxygen was exposed. Then the fire dug deeper. There were raw materials below the thin sheet of water ice; and the sheet was thin, nonexistent in some places, for it had all formed when the spaceship struck, billions of years ago. Sodium and calcium veins; even iron burns furiously in the presence of oxygen and enough heat. Or chlorine, or fluorine; both halogens were present; blowing off the top of Pluto's frozen atmosphere, some burning with hydrogen in the first sheets of flame. Raise the temperature enough and even oxygen and nitrogen will unite.

The Belters watched like men mesmerized. They were spacemen, and used to strange sights, but they would never again see anything as strange as a world burning. The ring of fire was almost a great circle now, more than a hundred miles broad. When it contracted on the other side of the world there would be an explosion such as could only be imagined.

The coldest spot within the ring was the point where the fire had started.

The *Golden Circle* had gone straight up, ringing and shivering from the blast, with sheets of fire rushing past the wing and hull. Kzanol/Greenberg had the wind knocked out of him. Kzanol was unconscious. The ship was not yet harmed. It certainly hadn't been harmed by the heat of combustion. It was built to withstand extreme fusion heat for weeks at a time.

But the *pilot* was out of control. His reflexes had taken over at the instant the shock wave hit, and then his conscious mind . . . He found himself his own master. And he made his decision and turned off the fuel flow.

The drive couldn't possibly be started again.

Kzanold raged and told him to die, but it was too late.

The ship, powerless, bucked and swooped in the turbulent burnng wind.

Kzanol/Greenberg cursed fluent and ancient English. Below him a wall of fire tens of miles high retreated toward the horizon. The ship hadn't turned over; the gyros must still be on.

The buffeting from below eased. The *Golden Circle* slowly began to fall.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

XVIII

"That's that," said Masney wearily. "And a good thing too. Do you suppose there ever was a telepathy amplifier?"

"Sure I do. And it's not over yet." Garner was flexing his fingers and looking worried. "Lloyd, just why do you think I was so worried about the Belt beating us to Pluto? Why did we come after them anyway? That amplifier is a new weapon! If the Belt takes it apart and makes one that they can use themselves, we could see the worst and most permanent dictatorship in history."

Masney looked at the future Luke had painted and, judging by his expression, found it evil. Then he grinned. "They can't land. It's okay, Luke. They can't get down to the helmet because the—wait a minute. Is Pluto still explosive?"

"I don't know. But they can go down if they want, regardless. All they have to do is land on the day side, where there's no hydrogen, and land so fast they don't burn through the nitrogen layer. They'd *melt* through, and eventually they'd have to dig the ships out, but that's nothing. What counts is the hydrogen. Miss that and you probably won't start a fire.

"They'll probably go down for the helmet as soon as the fire stops. We've got to destroy it before they get it. Or after."

Masney nodded. "We've got some time," he said.

"They're some distance from Pluto."

"Not far enough," said Garner.

Larry Greenberg opened his eyes and saw darkness. It was cold . . . "The lights don't work," said a voice in his mind.

"Did we crash?"

"We did indeed. I can't imagine why we're still alive. GET UP."

Larry Greenberg—no longer Kzanol/Greenberg—got up and marched down the aisle between the passenger's chairs. His muscles, bruised and aching, seemed to be acting by themselves. He went to the pilot seat, removed the pilot and sat down. His hands strapped him in, then folded themselves into his lap. There he sat. Kzanol stood beside him, barely in the range of his peripheral vision.

"Comfortable?"

"Not quite," Larry confessed. "Could you leave one arm free for smoking?"

"Certainly." Larry found his left arm free. He still couldn't use his eyes. He pulled out a cigarette and his lighter, moving by touch.

"It's a good thing I'm one of those people who can shave without a mirror," he thought.

Kzanol asked, "What does that have to do with it?"

"It means I don't get uncoordinated without my eyes."

Kzanol stood watching him, a blurred mass at the edge of sight. Larry knew what he wanted. He wouldn't do it; he wouldn't ask.

What did Kzanol look like? he wondered.

He looked like a thrint, of course. Larry could remember being Kzanol/Greenberg, and all he had seen was a small but handsome thrint.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

But when he'd walked past Kzanol, down the aisle to the pilot room, his fleeting glimpse had found something terrifying, something one-eyed and scaly and irridescent green, with gray giant earthworms writhing at the corners of the lipless mouth, with sharp, pointed, metallic teeth, with oversized arms and huge, machine-like hands.

"Are you wondering about my oath?" The thrintun voice was chilly, by its own standards.

"Oaths. Yes, now that you mention it."

"You are no longer a thrint in a human body. You are not the being I gave my oath to."

"Oh."

"I still want you to help me manage Earth."

"But you'll manage me."

"Yes, of course."

Larry raised his burning cigarette and tapped it with his forefinger. The ash fell slower than mist past his gaze and disappeared from sight. "There's something I should tell you," he said.

"Condense it. My time is short; I have to find something."

"I don't think you should own the Earth any more. I'll stop you if I can."

Kzanol's eating tendrils were doing something strange Larry couldn't see what it was. "You think like a slave. Not a ptavv, a slave. You had no conceivable reason to warn me."

"That's my problem."

"Quite. DON'T MOVE UNTIL I RETURN." The command carried overtones of disgust. A dark blur that was Kzanol moved, vanished.

Larry heard the airlock chugging to itself.

The clerk was a middleman. It was his job to set priorities on messages sent into and received from deep space. At three in the morning he answered the ring of the outside phone.

"Hello, ARM Maser Tranceiving Station," he said, a little sleepily. It had been a dull night.

It was no longer dull. The small brunette who looked out of his screen was startlingly beautiful, especially to the man who saw her unexpectedly in the dead hours.

"Hello. I have a message for Lucas Garner. He's on his way to Neptune, I think."

"Lucas Garner? What — I mean, what's the message?"

"Tell him that my husband is back to normal, and he should take it into consideration. It's very important."

"And who is your husband?"

"Larry Greenberg, That's G-R-"

"Yes, I know. But he's beyond Neptune by now. Wouldn't Garner already know anything you know about Greenberg?"

"Not unless he's telepathic."

"Oh." It was a trick decision for a clerk. Maser messages cost like uranium, less because of the power needed and the wear and tear on the delicate machines than because of the difficulty of finding the target. But only Garner could decide whether an undependable "hunch" was important to him. The clerk risked his job and sent the message.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The maser beam reached Pluto more than five hours later. By that time it was no longer useful.

Most of the beam missed Pluto and kept right on going; and the message was picked up centuries later by beings who did not resemble humanity in the least. They were able to determine the shape of the conical beam, and to compute its apex. But not accurately enough.

The fire had slowed now. Most of the unburned hydrogen had been blown before the fire, until it was congested into a cloud mass opposite on Pluto from the resting place of the *Golden Circle*.

Around that cloud bank raged a hurricane of awesome proportions. Frozen rain poured out of the heavens, hissing into the nitrogen snow The layers above nitrogen were gone, vaporized, gas diluting the hydrogen which still poured in. On the borderland hydrogen burned fitfully with halogens, and even with nitrogen to form ammonia, but around most of the great circle the fires had gone out. Relatively small, isolated conflagrations ate their way toward the new center. The 'hot' water ice continued to fall. When it had boiled the nitrogen it would begin on the oxygen. And *then* there would be a fire.

At the center of the hurricane the ice stood like a tremendous Arizona butte. Even the halogens remained frozen across its flat top, thousands of square miles of fluorine ice with near-vacuum above. Coriolis effects held back the burning wind for a time.

On the other side of the world, Kzanol stepped out of the *Golden Circle*.

The thrintun spacesuit was a marvelous assemblage of tools. No changes had been made in it for centuries before Kzanol's time; for the design had long been perfect, but for an unsuspected flaw in the emergency systems, and the naive thrintun had never reached that level of sophistication which produces planned obsolescence. The temperature inside the suit was perfect, even a little warmer than in the ship's temperature.

But the suit could not compensate for the wearer's imagination.

Kzanol felt the outer chill as his ship fell behind. Miles-thick blankets of nitrogen and oxygen snow had boiled away here, leaving bubbly permafrost which showed dark and deep green in the light of his helmet lamp. There was fog, too, and dense but very deep, a single fog bank that stretched halfway around the world.

Moving in great, easy flying hops, he reached the first rise of the crescent in twent minutes. It was three miles from the ship. The crescent in twenty minutes. It was three miles from the ship. The crescent was now a slightly higher rise of permafrost, scarred and pitted from the fire that had crossed it. Kzanol's portable radar, borrowed from the *Circle's* lockers, showed his goal straight ahead at the limit of its range. About a mile ahead, and almost a thousand feet deep in permafrost.

Kzanol began to climb the slope.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

PLUTO

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"We're out of arrows," the man in Number Four ship said gloomily. He meant missiles. "How do we stop him now?"

"We'll have to wait and see," said Lew. "Maybe we can get word to Atwood to start shooting. At worst we may have to go ahead and ram. But one thing's for sure: Garner must not be allowed to leave here with that amplifier! If he does, we're likely to see history's worst period of slavery."

"And with an Earthworm at the top."

"Perhaps we could go down and destroy it by hand," offered Number Two. "Land on the dawn side and mount an expedition. 'Course we'd have to take the radar out of one of the ships and carry it somehow."

Kzanol aimed the disintegrator thirty degrees downward and flipped the firing switch.

The tunnel formed fast. Kzanol couldn't see how fast, for there was nothing but darkness inside after the first second. A minor hurricane blew out of the tunnel. He leaned against the wind as against a wall. In the narrow cone of the beam the 'wind' was clear, but beyond the edge it was a dust storm. The wind was dust, too, icy dust torn to particles of two and three molecules each by the repulsion of the protons.

After ten minutes Kzanol decided the tunnel must be getting too wide. The opening was less than a foot across; he used the disintegrator to enlarge it. Even when he turned off the digging tool he couldn't see very far into it.

After a moment he walked into the darkness.

XIX

With his left hand Larry reached out and shook the pilot's shoulder. Nothing. It was like a wax figure. He would probably have felt the same way.

Somewhere in the back of his mind was Judy. It was different from the way it had been in the past. Now, he believed it.

Even when separated by over three billion miles, he and Judy were somehow aware of each other. But no more than that.

He couldn't tell her anything. He couldn't warn her that the Bug Eyed Whosis was hours or minutes from owning the Earth.

The pilot couldn't help him. He was certainly paralyzed, probably dead. The poor fool should have turned off the fusion shield when he had the chance.

Where was his mind shield? An hour ago he had created an impenetrable telepathic wall. Now he couldn't remember how he'd done it. He was capable of it, he knew that, and if he could — Hold it!

No, it was gone. Some memory, some thrintun memory.

Well, let's see. He'd been in Masney's office when the thrint had screamed at everybody to shut up. His mind shield had — But it had already been there. Somehow he had already knew how to use it. He had known ever since —

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Sunflowers eight feet across. They turned round and round, following the sun as it circled the plantation at Tpiffnitun's pole. Great silver platters sending concentrated sunlight to their green photosynthetic nodes. Flexible mirrors mounted on thick bulging stalks, mirrors that could ripple gently to put the deadly focus wherever they wanted it: on a rebellious slave or a wild animal or an attacking enemy thrint. For some reason they never attacked members of the House they protected . . .

In the giant luxury liner, Larry Greenberg tingled. Fish on fire! The sunflowers must have been controlled by the tnuctip house slaves! He had not the slightest proof, but he knew. He thought, We thrintun . . . Those thrintun really set themselves up. Suckers!

Remembering again, he saw that the sunflowers weren't as big as they looked. He was seeing them from Kzanol's viewpoint, Kzanol one and a half feet tall, a child of eight thrintun years. Kzanol half grown.

Kzanol walked slowly through a tunnel which gleamed dull white where the light fell. With practice he had learned to stay the right distance behind the disappearing far wall, following behind his disintegrator beam, so that he walked in a sloppy cylinder six feet in diameter. The wind roared past him and ceased to be wind; it was flying dust and ice particles, flying in vacuum and low gravity, and it packed the tunnel solidly behind him.

The other suit was two hundred feet farther down the sloping tube.

Kzanol looked up. He turned off the disintegrator and stood stiffly furious, waiting. They had dared! They were just beyond control range, but coming in fast. He waited, ready to kill.

Mature consideration stopped him. He needed a ship in which to leave Pluto; his own was probably shot to heat death. Those above were single-seaters, useless to him, but he knew that other ships were coming. He must not frighten them away.

He would let these ships land.

Viprin race. Bowed skeletal shapes like great albino whippets seemed to skim the dirt surface of the track, racing round and round the audience standing breathless in the center of the circle. Kzanol on one of the too-expensive seats, clutching a colored plastic cord, knowing that this race meant the difference between life as a prospector and life as a superintendent of cleaning machinery. He would leave here with commercials to buy a ship, or with none.

Larry dropped it. It was too late in Kzanol's life. He wanted to remember much earlier. But his brain seemed filled with fog, and the thrintun memories were fuzzy and hard to grasp. As Kzanol/Greenberg he had had no trouble with his memory, but as Larry he found it infuriatingly vague.

The earliest thing he could remember was that scene of the sunflowers.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He was out of cigarettes. The pilot might have some in his pocket, but Larry couldn't quite reach it. A gnal might help. Definitely one would help, for it would probably kill him in seconds. Larry tore a button from his shirt and put it in his mouth. It was round and smooth, very like a gnal.

He sucked it and let his mind dissolve.

Two ships rested on the other side of what remained of Cott's Crescent. In the cabins the pilots sat motionless, waiting for instructions and thinking furious, futile thoughts. The other ships had parked in close orbits about Pluto before their pilots stopped moving.

Kzanol turned his disintegrator on and began walking. Something bright glimmered through the dark ice wall.

"They're down," said Masney. "Two of them. Two more in orbit, waiting for us." His eyes, deep-sunk in a gaunt white face, had a desperate look. "Too little, too late."

"No. Don't forget, Lloyd, we're worrying about an alien tool. What are the odds that a human brain can use it? I'll tell you what I don't like, though." Garner rubbed the palm of his hand across his scalp. "If we attack, the first missiles will have to go to Woody and Smoky. They're Belters, and they're armed."

"I know. Luke, I want a promise." Masney looked like Death. He was an old man in his own right, and he had been starved for some time. "I want you to swear that the first smell we get of the thought amplifier, we destroy it. Not capture, Luke. Destroy!"

"All right, Lloyd. I swear."

"If you try to take it home. I'll kill you."

His finger, an oversized finger in an oversized mouth with tiny needle teeth. He was on his side, more a lump of flesh than anything else, and he sucked his finger because he was hungry. He would always be hungry.

Something huge came in, blocking light. Mother? Father. His own arm moved, perking the finger contemptuously away, scraping it painfully on the new teeth. He tried to put it back, but it wouldn't move. Something forceful and heavy told him never to do that again. He never did.

No mind shield there. Funny how sharp that picture was, the memory of early frustration.

Something . . .

. . . The room was full of guests. He was four thrintun years old, and was being allowed out for the first time. Shown proudly by his father. But the noise, the telepathic noise was too loud. He was trying to think like everybody at once. It frightened him. Something terrible happened. A stream of dark brown semiliquid material shot out of his mouth and spread over the wall. He had defecated in public.

Rage, red and sharp. Suddenly he had no control of his limbs; he was running, stumbling toward the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

door. Rage from his father and shame from himself — or from his father? He couldn't tell. But it hurt, and he fought it, closed his mind to it. Father disappeared, and the guests too, and everybody in the universe was gone. He stopped, frightened. The other minds came back.

His father was proud, proud. At the age of four little Kzanol already had the Power!

Larry grinned a predatory grin and got up.

His helmet? In the lounge, on one of the seats. He got it and screwed it down and went out.

Kzanol tugged at the great bright bulk until it came out of the ice. It looked like a crippled goblin lying on its back.

He'd want help now, to get it back. Kzanol turned his attention toward Larry Greenberg. He found a blank.

Greenberg was nowhere.

That wasn't good, not good at all. Greenberg had warned him that he would try to stop him. He must be on his way now, with his mind shield in full working order. Fortunately the amplifier helmet would stop him. It would control even a grown thrint, though of course that was illegal. Kzanol reached down to turn the suit over.

Too bad about the racarliw.

It was snowing. In the thin air the snow fell like gravel thrown by an explosion. It fell hard enough to kill an unprotected man. Where it hit it packed itself into a hard surface.

Luckily Greenberg didn't have to see. He could sense exactly where Kzanol was, and he walked confidently in that direction. His suit wasn't as good as Kzanol's. The cold seeped gently through his gauntlets and boots. He'd suffered worse than that on skiing trips, and loved it.

Suddenly he couldn't find Kzanol. The thrint had put up his mind shield. Larry stopped, bewildered, then went on. He had a compass, so he would not walk in circles. But Kzanol must now know he was coming.

Half an hour later, an hour since he'd left the ship, he began to see powdery snow. It was light and fluffy, very different from the falling ice bullets. It was the residue of Kzanol's digging. He could use it as guide.

The powder snow grew deeper and deeper, until suddenly it reared as a towering mountain of packed snow. When he tried to climb it Larry kept slipping down the side in a flurry of snow. But he had to get up there! If Kzanol got to the statue it would be all over. He kept climbing.

He was halfway up, and nearly exhausted, when the top began to move. Snow shot out in a steady stream and fell in a slow fountain. Larry slid hastily down for fear of being buried alive.

The snow continued to pour out. Kzanol was digging his way back . . . but why wasn't he wearing the helmet?

The fountain rose higher. Particles of ice, frozen miles up in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Pluto's burnt and cooling atmosphere, pelted through the drifting fountain and plated themselves on Larry's suit. He kept moving to keep his joints free. Now he wore a sheath of translucent ice, shattered and cracked at the joints.

And suddenly he guessed the answer. His lips pulled back in a smile of gentle happiness, and his dolphin sense of humor rose joyfully to the surface.

Kzanol climbed out of the tunnel, tugging the useless spare suit behind him. He'd had to use the disintegrator to clear away the snow in the tunnel, and he'd had to climb it at a thirty degree rise, dragging a bulk as heavy as himself and wearing a spacesuit which weighed nearly as much. Kzanol was very tired.

The sight of the slope down was almost too much. Plow his feet through that stuff —? But he sighed and sent the spare suit rolling down the mountainside. He watched it hit the bottom and say, half buried. And he followed it down.

The ice fell faster than ever, hundreds of thousands of tons of brand new water freezing and falling as the planet tried to regain its equilibrium state, forty degrees above absolute zero. Kzanol stumbled blind, putting one big chicken foot in front of the other and bracing for the jar as it fell, keeping his mind closed because he remembered that Greenberg was somewhere around. His mind was numb with fatigue and vicarious cold.

He was halfway down when the snow rose up and stood before him like a thrintun giant.

He gasped and stopped moving. The figure slapped one mitten against its faceplate and the thick ice shattered and fell. Greenberg! Kzanol raised the disintegrator.

Almost casually, with a smile that was purest dolphin, Larry reached out a stiff forefinger and planted it in Kzanol's chest.

XX

The honeymooner was no longer a spaceship, but she made an adequate meeting hall and hospital. Especially hospital, for of the ten men who faced each other around the craps table, only two were in good health.

Larry Greenberg, carrying a thrintun spacesuit on each shoulder, had returned to find the *Golden Circle* nearly buried in ice. The icy sheath over the top of the ship was twenty feet thick. He had managed to burn his way through it the hard way, with a welder in his suit kit, but his fingers and toes were frostbitten before he had uncovered the airlock. Two days later somebody arrived to treat him.

Smoky Petropoulos and Woody Atwood had located the *Golden Circle's* distress signal and hovered over its point of origin until they had boiled the ship out of its icy tomb. Then, necessarily one at a time, they had moved the paralyzed Belt fleet to the *Golden Circle* in the two-man ships. The four were still unable to move except for their eyes and voice. Fortunately they had

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

all been wearing spacesuits when the second fleet tracked them down.

Garner and Anderson was nearly over their induced paralysis, which now showed only in an embarrassing lack of coordination.

"So we all made it," said Luke, beaming around at the company. "I was afraid the Last War would start on Pluto."

"Me too," said Lew. "We kept hearing your calls but we couldn't answer. Not even when you delivered the ultimatum. It was pretty frightening." He blinked and tightened his lips, dismissing the memory. "So what'll we do with the second suit?"

Now he had everybody's attention. This was a meeting hall, and the suit was the main order of business.

"We can't let Earth have it," said Smoky. "They could open it. We don't have their time stopper."

"You could get it with a little research," said Garner. "So —"

"Dump it on Jupiter," advised Masney. "Put it in the cargo hold of a two-man job and let me and Woody fly it. If we both come back alive you know it got dumped on schedule. Right?"

"Right," said Lew. Garner nodded. Others in the lounge tasted the idea and found it good, despite the loss of knowledge which must be buried with the suit. Larry Greenberg, who had objections, kept them to himself.

"Okay." Lew stood up. "Now, which one is the amplifier?"

There was a full two seconds of dismayed silence.

Greenberg pointed. "The wrinkled one with both hands empty."

Once it had been pointed out, the difference was obvious. The second suit had wrinkles and bumps and bulges; it had no more personality than a sack. But the suit that was Kzanol —

It lay in one corner of the lounge, knees bent, disintegrator half raised. Even in the curious shape of arms and legs, and the expressionless mirror of a head, even lying on its side, one could read the surprise and consternation which must have been the thrint's last emotions. There must have been fury too, frustrated fury that had been mounting since Kzanol first saw the fused, discolored spot that had been the rescue switch on his second suit.

Garner tossed off his champagne, part of the stock from the honeymooner's food stores. "So it's settled. The Sea Statue returns to the U. N. Comparative Cultures Exhibit. The treasure suit goes to Jupiter. I submit the Sun might be safer, but what the hell. Greenberg, where do you go?"

"Home. And then Farside, I think." Larry Greenberg wore what Lucas Garner decided was a bittersweet smile, though even he never guessed what it meant. "They'll never keep Judy and me away now. I'm the only man in the universe who can read bandersnatchi handwriting."

Masney shook his head, started to laugh. He had a rumbling, helpless kind of laughter, infectious as mumps. "Better not read their minds,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Greenberg. You'll end up as a whole space menagerie if you aren't careful."

Others took up the laughter, and Larry smiled with them, though only he knew how true were Masney's words.

Or had Garner guessed? The old man was looking at him very strangely. If Garner guessed that, two billion years ago, Kzanol had taken a racarliw slave as a souvenir —

But that was nonsense.

So only Larry would ever know. If the second suit were opened it could start a war. With controlled hydrogen fusion as common today as electrical generators had been a century and a half back, any war might be the Very Last. So the suit had to go to Jupiter; and the doomed racarliw slave had to go with it, buried in dead, silent stasis for eternity.

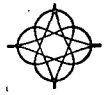
Could Larry Greenberg have sacrificed an innocent sentient, even for such a purpose? Larry plus dolphin plus thrint, it wasn't even difficult.

Just a slave, whispered Kzanol. Can't defend himself, thought Charley; he has no rights. Larry made a mental note never to tell Judy, even by accident, and then went on to more pleasant things.

What was he thinking? Garner wondered. He's dropped it now; I might as well stop watching him.

But I'd give my soul if I could read minds for an hour, if I could pick the hour.

He never got it; though. END



Coming .... Tomorrow!

Zenna Henderson, one of the most talented distaff writers of science fiction, will make her first appearance in *Worlds of Tomorrow* next issue with a short story called *The Effectives*. It hasn't anything to do with her series about "The People". The characters in *The Effectives* are neither psionic supermen nor mutants. In fact, that's what is so special about them — they aren't, but they produce results as though they were!

We also have a couple of fine non-fiction pieces for you next month. One of them investigates the question of aliens. We've seen stories about vegetables and sea-creatures, silicon chemistries and high-temperature metabolisms; but what Tom Purdom is interested in here is not what aliens might look like, but how they will *think*. Ever stop to wonder what sort of Oedipus complex a race that reproduces by spores might inflict on its members? Don't wonder — get the next *Worlds of Tomorrow* and read Purdom's *The Alien Psyche!*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

UNDERSEA WEAPONS TOMORROW

by JOSEPH WESLEY

Wesley takes us now to the major combat frontier of tomorrow's war, the vast battleground of the seal

The year in 1985, and an undeclared war is in progress. We of the Western Alliance have found it necessary to blockade an island — near our own shores in geography, but nearer the opposite pole in ideology. We have not used the word "blockade", but in point of fact, our warships and our aircraft have prevented and are continuing to prevent any shipping from reaching the island.

A major power, distant geographically, but nevertheless a friend of the island, has—not inaccurately — declared the blockade to be a belligerent act, and has instituted what he refers to as "controlled retaliation". He has, unleashed his not inconsiderable submarine force against portions of our shipping, in an effort to force us to back down and lift the blockade. We are unwilling to permit the warfare to escalate, but are determined to carry forth this fight on his chosen ground. What are our chances of winning?

To win, in the terminology of undeclared war, it is necessary for us to make it uneconomic for the enemy to continue his submarine warfare before he makes it uneconomic for us to continue the blockade — the economics being not merely in terms of money, but also in terms of lives and of reputation

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and of ability to influence the uncommitted — and to make the logical decision of our major-power opponent, when he is forced to the realization that the economics of war have gone against him, one of acceptance of the blockade, not one of escalation of the conflict.

Our opponent, on the other hand, is equally desirous of applying pressure to force us to accept a lifting of the blockade, and equally anxious not to force an expansion of the fighting. His forces are not, therefore, attacking our luxury passenger ships or our cruise ships. Although ocean cruises have suddenly become unpopular for vacations, it is not because a single such ship has been sent to the bottom, or even threatened. It is the larger cargo ships and the great oil tankers that are the chief victims. A *Lusitania* incident with the inflamed passions that would result is the last thing our foe desires.

He is able to achieve this precision of selection of targets by the combination of a network of search satellites, centralized computer programming, and rapid satellite-to-underwater communications. It would be impractical for even an elaborate satellite spy network to continually photograph the shipping of the world on all the seven seas, to transmit the resulting photographs to the ground either by electronic means or by physical recovery of photographic capsules, to reduce the data in order to identify suitable ships to attack (and to refuse to attack) and to relay this information plus probable target course and speed to submarines in time to be useful. The job would be monumental, expensive ,and too slow and uncertain to do much but add to the confusion. Also, it would be unnecessary.

The ships leaving our ports, and those of our allies, are initially detected and identified photographically, by satellite, and the ship's location, heading, and speed as determined by wake characteristics entered into the computer. The next satellite to pass the spot does not need to photograph — it merely uses its optical and infrared sensors to determine the exact location of all ships at the time of its passage, and then transmits this information to the ground at its convenience.

The network of spy satellites is heavy enough to put one in surveillance range of every spot on the earth's surface every few minutes. The time of return over a ground interrogation station varies widely, to be sure, depending on orbital inclination and altitude. This is unimportant in its effect, because the computer is able to time-correlate all input information so that the vast majority of ships, once correctly identified by photography, are unambiguously tracked.

In some cases, of course, where the port of departure is under cloud cover or darkness, a ship detected by radar or by infrared is tracked as an unknown or unidentified target, and the computer commands more positive identification by a photographic satellite when conditions become optically favorable.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Similarity, at points where ship's tracks intersect and become confused, photographic reidentification of one or the other of the passing ships is required, whenever one of the targets is of the "do not shoot at this one" category and the other is a priority quarry. In any event, the computer holds a complete picture of all of the world's shipping, with the exception of very minor coastal traffic, and boats below a preselected minimum size.

The effort is simplified, because all neutral nations (and most of the Western allies too, for that matter) keep the opposition fully supplied with information concerning all shipping not subject by the enemy's rules to attack. This is done through an understandable desire to keep ships on top of the water.

The submerged enemy submarines are kept informed by very low frequency broadcasts, of the location of shipping of interest to them. The submarines themselves keep their homeland informed as to their location by occasionally poking a whip antenna above the water and transmitting an extremely brief line-of-sight radio report to a satellite known to be above the horizon.

The enemy invariably, then, has recent information as to a more than adequate number of suitable targets, and can make his selection of the juiciest plums closest to waiting submarines and farthest from defending surface forces in a near-optimum manner.

It is possible, of course, to shoot down the spy satellite network on a continuing basis, but unfortunately, that won't help. On an economic calculation,—it costs about as much to shoot a satellite down as it does to send one up. And by the time one can be shot down it will normally have completed enough of an orbit or orbits, and will have relayed back enough information, so that the enemy can manage to keep his picture of our shipping fairly complete.

And many of the communications-relay satellites he can use for the transfer of information from his spy satellites to his computers are aloft as the result of multi-national agreements, and are not subject to being shot down by either side, under the realities of limited warfare.

With the location of our own ships known, then, and with nothing that can be done about that, the problem becomes one of getting rid of the enemy submarines before they can make use of their information to get rid of us — or at least to get them before they can get enough of us to make the trade uneconomic.

Since these are major enemy submarines, with the capability of long periods of sustained high speeds under water, they are expensive to build, complicated to maintain, and require well-trained crews. On a straight cost-of-submarine-and-weapons versus cost-of-merchant-ship-and-cargo basis, the break-even point would probably be somewhere between five merchantmen to one submarine and seven to one, depending on how selective the enemy chooses to be in picking his targets.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

On a basis of ability to tolerate losses, the ratio falls to between one to one and two to one. The losses of mechantmen and some of their crews are widely publicized; the losses of enemy submarines remain a dark secret. Also, the effects of loss of trade, interruption of services, increase in insurance costs, and compounded delay and confusion are frequently far in excess of intrinsic cargo costs.

All right, then, how do we get the job done, with at most only one merchantman being sunk for each submarine we kill?

Killing submarines offers two separate types of problems. The first may be considered to be that anti-Polaris requirement — to kill a nuclear-armed deterrent unit, if the day of Armaggedon arrives, before he can fire his missiles. This requires tracking down and locating a submarine that has no task but to hide, and to stay hidden, until used. Such a ship employs all of its own devices to stay away from enemy forces, and to avoid detection. With ever greater missile range — in the 1985 period in question, an effective range in excess of 6,000 nautical miles for a submarine-launched missile — the volume of ocean from which a deadly attack can be launched is almost unlimited. Under these circumstances, even a device that could render the oceans as transparent as a glass of dry gin would be of only limited effectiveness; and in the Year of our Lord 1985, as in 1965, no such device is even theoretically being dreamed of.

The problem confronting us, fortunately, is of the second and easier type — to kill an enemy who is forced to come to us and to make his presence periodically known by hitting at us. Here the problem is theoretically much simpler, and is largely a function of "time late". If you can get detection devices and weapons to where an enemy submarine has been while he is still there, within range, you can probably spot him, keep him localized, and kill him.

We can not make use of our knowledge that he is using a nuclear power plant in selecting our detection devices, however, because he isn't. Instead, and at great savings in cost, he is a conventional battery-powered submarine, but is using primary fuel cells for batteries.

This means that he can take on a shipload of oil fuel, and can expend all of that fuel while submerged without having to come to the surface occasionally to charge batteries, as did old-fashioned conventional submarines.

This also means that the submarine must return to a port from time to time to refuel — about every 16,000 miles — and can not continue to cruise almost indefinitely as can nuclear-powered craft. But considering that each such submarine is kept fully informed as to the location of our ships, he is able to expend his armament before he expends his fuel when he has to return to port anyway. Or he can calculate that the alternative is to be expended himself by our offensive

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

action before he can get rid of either armament or fuel; and that doesn't change his answer. In either case, his attack submarines find fuel-cells to be more effective than nuclear power.

In reducing the "time late," in endeavoring to have effective weapons on the spot where needed, one solution, often used in the past, is to bunch the enemy's targets into convoys of sufficient size that it is possible to provide an efficient sub-killer escort with each such convoy. This means that the enemy submarine is forced into the proximity of death and his own destruction in order to be able to carry out his mission. Bad luck again. In 1985 the convoy system won't work. On two counts.

First of all, a convoy system is inefficient. The additional shipping required, the additional delays, the addtional cost in money and in manpower to hold ships idle while assembling the convoy, and then to conform to the speed of the slowest ship in the convoy, combine to reduce the acceptable level of trade-off of losses to less than one merchantman per submarine sunk. Unless the convoy has a high probability of sinking the submarine before he can get in even one attack, the use of convoys foretells our ultimate loss of the limited war.

And secondly, the bunching of ships into convoys seems to provide mostly a bunching of targets. A submarine can probably kill eight or ten ships before there has been time for a counter attack. This high number of kills results because a convoy is noisy, and reveals details of its presence at long range. Passive tracking can give — in conjunction with satellite input information as to average speed and direction — a satisfactory fire-control solution for enemy weapons. Torpedoes are fired with very low speed setting, to provide very long range coupled with silent running to reduce chances of early detection and identification. On command of a coded sonar pulse from the submarine, the entire load of torpedoes suddenly switches to a high-speed pattern running with active homing on detected targets, operating with great effectiveness from their position already inside the convoy. This sudden confusion often even serves to let the submarine — already distant on the horizon — get clean away.

Of course, the ships of the convoy are towing noise makers, and are able to release decoys at the first sign of trouble, in order to confuse the issues and make enemy success less assured. The enemy programmed torpedo logic makes the decoys a losing gambit, if a torpedo remains alive after it is learned that an attack is not on a ship but a decoy, and changes target. On a seemingly random basis, the target it next selects is not the "best" target, as its instruments see the situation, because it will probably be another decoy. Instead, it attacks targets of apparently reduced probability, shifting targets after each attack, until it either explodes against a hull, or runs out of energy.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Usually it finds a target that explodes satisfactorily — from the point of view of the enemy.

With convoys out of the picture, one of the possible alternatives is to dispatch ships independently, and to keep them far enough apart so that the enemy can never be able to predict a spot for a submarine where he will be able to pick off two at once. (This unfortunately, help's the enemy's computer to keep his picture clear.) Then, hunter-killer groups must be spotted at sufficiently close intervals to keep favorable the "time late" on scene following an attack. This is not easy to do.

Using his relatively slow terminal-active torpedoes, the enemy may have fired up to fifteen minutes before the explosion. During that time he can be steaming away at high speed, and continue that urgent retirement until our localizing and killing force arrives. The total distance he might be from the target at the end of half an hour, then, exceeds thirty miles.

The assured sonar-detection range of our active systems in this time frame, as carried by hover type aircraft, is about twenty-five miles, not degrading much under moderately adverse sea and wind conditions. Considering that at the end of the Korean War, long after World War II, assured sonar range for a ship often could not be counted on to exceed one mile, and was considerably less than that for dunking helicopters, the improvement is as startling as it is inadequate.

With hover aircraft, speeds increased to six hundred knots, and with rapid reaction capabilities always at the ready, these retaliatory stations have to be located not more than five hundred miles apart over all of the world's trade routes. Against each attack, at least two of the detecting aircraft have to be deployed. A single dunking sonar usually cannot be placed right alongside the spot of the disaster.

The disaster is often still going on, with the victim ship exploding and burning. These breaking-up noises serve to mask the echo return. Also, the sinking ship itself, with its great columns of bubbles and debris, provides a zone through which sonar penetrates with difficulty. A submarine escaping on the other side of the victim from the dunking aircraft can be expected to be able to break free.

Also, redundant equipment is important, so that equipment failure doesn't assure that the target will get away. Once either of the detecting aircraft finds and identifies a target with assurance as a submarine, the other aircraft repositions itself in optimum position to prevent the submarine from using land or unusual thermal layers to escape.

For each target in each hunter-killer organization, then, two large and expensive hover aircraft capable of sustained speeds of six hundred knots to a range of three hundred miles, with several hours of hover time remaining and with sufficient on-board power-generating capability to service a twenty-five-mile-range active sonar, are required. In

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

fact, a third such aircraft per target is needed for backup and for staggered relief on station.

Together with these major aircraft, several smaller planes, acting as weapons carrier, are necessary to be sent when the target is found. All in all, seagoing hunter-killer stations of even large size are unable to provide aircraft for more than eight or ten simultaneous engagements. This, in effect, means that since the enemy can program his time of engagement, we can afford to spot no more than ten of our vulnerable ships for about every 200,000 square miles of ocean, without expecting the kills-per-kill ration to turn against us.

Even where we have full coverage, this is a very restrictive requirement. Of course, it does not fully apply where we can use land bases, which can handle more aircraft than can ships, but the total number of aircraft required becomes very large. Away from land, the total number of mobile hunter-killer seagoing platforms required becomes very large.

These seagoing platforms have not been called aircraft carriers because although they carry aircraft they bear little resemblance to the ships that used that name in the middle twentieth century. In the first place, their aircraft have a vertical take off and landing capability, so the necessity to make high speed in order to provide sufficient wind over the deck for the planes to become airborne is not required. Second, since these ships must be placed and remain with overlapping coverage along the shipping lanes, high speed is not required to permit them to keep up with a convoy, or to move rapidly from place to place.

The hunter-killer stations, then, resemble gigantic rafts. They are rigged outboard with multiple layers of steel nets for anti-torpedo protection. They have fast-reaction short-range anti-air-missile batteries to destroy incoming missiles directed against them from submarines — or from any other source.

With their nets tediously rigged in, they can make about six knots — with them rigged out, less than five. They have docking facilities inside their nets to bring cargo ships alongside, which then replenish their fuel and supplies. They are floating islands, and they are ugly and unglamorous. Navy men do not seek duty aboard them.

And in any case, there are far from enough of them, just as there are not enough hover craft. In peacetime, we couldn't afford enough of them, and now that there is conflict, we lack the time to build them. At raft speeds of less than five knots, we barely have time to station those that we do have where they are most needed.

Fortunately, we have available a supplementary device that serves greatly to increase the range and effectiveness of the hunter-killer stations.

Mr. Arthur Clarke has written with skill of the time when porpoises can be expected, with their high intelligence and their train-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ability, to assist man at sea as dogs have assisted him on land. Mr. Clarke has pictured these mammals serving as sheep and herd dogs — with whales as the objects of interest. With thoughts of war uppermost in its mind, the Navy has created a sort of K-9 corps of the deep.

Packs of trained porpoises are maintained near all of our principal ports. As each of our merchantmen heads out to sea, a small number of porpoises break off from the pack and accompany the ship, ranging far ahead of it and to the sides. Except the delicacies which are used as bribes — or as honest wages, depending on the point of view — the deployed porpoises forage for themselves, while on the lookout for enemy submarines.

These animals are, of course, unable to destroy a submarine when they find it. Some thought was given to making some of them into kamikazes, blowing themselves up along with an enemy submarine, but this was abandoned for two reasons: first, those men who were willing and able to train porpoises were not willing and able to train them to their own destruction, at least, without their prior agreement; and second, it was strongly suspected that the porpoises would soon get wise to the misuse that would be being made of their services and would stop cooperating, once their companions started blowing up, unless, again, the dead porpoises had volunteered for such extreme services.

Although by 1985 great progress in communication with these mammals has been made, it is still by no means certain that the admittedly high intelligence of a porpoise is of such a nature that he can be made to understand the concept of self-sacrifice for an abstraction, and it is also not clear that even if he can be made to understand the idea, he can ever be filled with such patriotism and martial fervor as to be persuaded, as did the Japanese kamikazes, to volunteer for self-destruction. It is enough to say that there is a Top Secret project attempting the necessary semantic rapport with porpoises to accomplish both of those ends.

Meanwhile, the porpoises have been trained to accomplish a difficult function, and it is known that they enjoy the task, which is not without its element of danger, and carry it out with great delight:

They "bell" the enemy submarines.

Each porpoise carries several mechanical-electrical gadgets which are streamlined so as to provide minimum impedence to his freedom and speed while swimming, and which he is capable of fastening, by a variety of means, to the hull of a submarine. Once attached, they activate themselves and each gadget sends out a distinctive coded call that can be heard at long range — 150 miles or more — using a listening device far simpler and far more modest in its power requirements than the monster active sonar with its range of only twenty-five miles. This passive dunking device that is designed to locate the "bells" is light

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

enough to be carried by the weapons aircraft without appreciable reduction of their armament. The effective radius of action is no longer limited by the time it takes an enemy to move beyond detection range. It now becomes the endurance radius of the weapons aircraft when modified to the additional role of dunking a passive sonar, and this may be taken as six hundred miles.

Under these circumstances, the tolerable number of merchantships per hundred thousand square miles of ocean under conditions of simultaneous attack is no greater than it was before — about five — but actually the problem of simultaneity no longer concerns us to any considerable degree. We can get one belled target, and then go and get another, since we will still find him in range of our detection gear.

The porpoises, after planting a bell, race back to their merchantship to report the enemy's direction and range, so that the mechantman can inform the hunter-killers. The porpoises then proceed to keep the merchantman informed of the actions of the enemy, and to replace the bell if the submarine manages to remove it.

It might seem that it would be enough for the porpoise merely to act as an informant, giving advance warning of the presence of a submarine, and letting the localizing and attacking aircraft be informed, using the already installed active sonar to complete the job. Even aside from the smaller number of sonar equipped aircraft that would be available, the planting of the bell is necessary. The porpoise can only have his reports relayed until his merchantman is sunk, and he can't prevent that from happening. (Those who think that porpoises can be persuaded to kamikaze are counting on the violent reaction of some of the more sensitive of these creatures to the loss of their ships.) Also, the presence of the continuous loud clangor attached to his hull has a distinct effect on most submarine crews. More merchantmen have survived because the stalking submarine panicked, and would not otherwise have made it.

Even more important, the greater the distance from the merchantman that the porpoise can spot the enemy submarine and bell him, the greater is the chance that the submarine will be attacked before he has a chance to reach his victim. A long-ranging porpoise is a valuable asset to a merchant skipper.

In addition to the technique of spotting and destroying submarines when they close in to try to kill our ships, there is the valuable tactic of spotting them as they attempt to depart from or return to their home ports.

Here, our own forces must use submaraines as the mother ships for the porpoises, and the porpoises travel in large hunting packs. These submarines are themselves very vulnerable to attack if detected, and therefore approach their operating areas slowly, usually settling to the bottom in areas which provide confused sonar bottom echoes. Once again, the porpoise bell the enemy

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

submarines. When they return with their reports to the mother submarine, a communication buoy is prepared which is towed well away from the mother submarine, and is then released. It pops clear of the surface, and provides a signal that triggers a satellite warning net. The buoy then remains floating for a matter of hours, transmitting a relatively weak signal that very long range aircraft, when they arrive, can use to determine datum.

Even a ten hour "time late" does not prevent one of our very long range aircraft from quickly locating the belled submarine, with assistance from the porpoises and their mother sub. These very long range aircraft do not themselves hover. They carry a pair of short-range short-flight-duration hover aircraft which do the actual localizing and weapons firing.

Another long range plane, carrying anti-aircraft missile systems, accompanies the ASW plane to defend it from being shot down, since this occurs within a few hundred miles of an enemy port, at best. The whole job is accomplished with a maximum of speed.

The combination of long range sub detection and long range ASW rocket weapons homing, after entering the water, on the loud coded bell noise, together with the use of the trained porpoises to do the belling, has seemed sure to bring the enemy promptly to his knees, and force him to discontinue his piratical undeclared sea war.

Unfortunately, we have had to discontinue for a time our use of the porpoises, and our losses have started to climb. The enemy had little success in trying to train porpoises of his own—our own trained animals are entirely capable of persuading wild mammals of their kind not to join the opposition—but our opponents have recently resorted to more deadly tactics. They have been deploying trained orcas.

These deadly killer whales, until we realized what was happening, wreaked great havoc among our harbor blockading packs, and we were forced to withdraw to prevent their total destruction.

When our intelligence reports indicated that the enemy had also commenced to have orcas accompany their killer submarines on their deployments, we voluntarily withdrew our ship-companion porpoises before they could be confronted and destroyed by the orcas.

A highly specialized crash ship building program, coupled with a retraining program for the porpoises, is expected to put us once again in a commanding position very shortly. The design of these new ships was completed some time ago, and pilot line construction had even occurred, but their quantity production was cancelled on the basis of a faulty cost effectiveness study that failed to consider all elements—particularly the orca.

Fortunately, these new ships are simple and quick to construct. They are small one-man submarines. Like the use of porpoises, and of necessity, they bear a close resem-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

blance to the ideas of Mr. Clarke—this time, his ideas for whale-herder submarines. A ship of this type is capable of nearly continual submerged operation with the support of the merchantman it accompanies. It can talk directly with the animals in the simple code language of human-porpoise communications. It is capable of bursts of speed far greater than either porpoise or ocra can sustain, and is highly maneuverable. And it is well armed to destroy killer whales.

Since the porpoises have been trained to run at the first sight of one of the whales, and to draw it into range of the small supporting submarine, a single such submarine is adequate for each merchantman. It would not be able to survive if it tried to attack the enemy submarine, which would be able to gobble it up casually with its longer range weapons without delaying its destruction of the merchantman.

But this is not true of the sub versus sub relationship once the enemy submarine has been belled. Then, our detection range easily exceeds that of the enemy, and simple torpedoes that are little more than mines with a short dash capability can be sewn in his path, to activate and home on the coded bell tone when the enemy submarine is sufficiently near.

As these small submarines of ours appear in increasing numbers, the tide of battle will turn once more our way. We are not yet disbanding our hunter-killer stations, however, in spite of the great cost effectiveness of the combination of the midget submarines operating in concert with the porpoises.

Now it is the turn of the enemy to have something clever up his sleeve. To counter it—whatever it may turn out to be—we need more than a single string to our bow.

The struggle will not be over, even if the island that started this trouble succombs to our blockade and returns to its former friendly state. It will just enter a new phase.

If we keep our thinking flexible and our reactions fast, we will be able to stay on top of whatever situation develops. If we don't, then we do not deserve to win. In this, things are not much different in 1985 from what they were back in the simpler era of 1965. END

A. E. VAN VOGT
is back in *If* with another great story! Don't miss
THE REPLICATORS
complete in the February issue!
Also
STARCHILD
by Jack Williamson & Frederik Pohl
and many more thrilling science-fiction stories.
February issue on sale now — get your copy today!

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SCARFE'S WORLD

by BRIAN W. ALDISS

Illustrated by MORROW

Scarfe's world was of no importance whatsoever . . . except to its inhabitants!

I

Young Dyak and Utliff with the panting breath stood on the seamed brow of the hill. It was a fine hot day, with a million cicadas thrilling about them like the heat itself. Under the heat haze, the far mountains were scarcely visible, so that the river that wound its way down from them held a leaden grayness until it got close to the foot of their hill.

At the foot of the hill, it flattened out into swamps, particularly on the far side where marshy land faded eventually into mist. The iguanodons were croaking and quacking by the water's edge, their familiar lumpy shapes visible. They would not trouble the men.

"How is it with you, Utliff? Are you coming down the hill with me?" Dyak asked.

He saw by Utliff's face that there was something wrong with him. The

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lie of his features had altered. His expression was distorted, changed in a way Dyak did not like; even his bushy beard hung differently this morning. Utliff shrugged his thick shoulders.

"I will not let you hunt alone, friend," he said.

Determined to show his imperviousness to suffering, he started first down the sandy slope, sliding among the bushes as they had often done. He was pretending to be indifferent to an illness to which no man could be indifferent. With a flash of compassion, Dyak saw that Utliff was not long for this life.

Glancing back, Utliff saw his friend's expression.

"One more runner for the pot, Dyak, before I go," he said, and he turned his eyes away from his friend.

Living things scuttled out of the bush as they headed toward the river, the furred things that were too fast to catch, and a couple of the reptiles they called runners—little fleet lizards, waist high, which sped along on their hind legs.

Utliff had a crude pouch full of stones at his side. He threw hard at the runners as they went, hitting one but not stopping it. Both men laughed. They were in no desperate need for food. There was always plenty; and besides, hunting runners was done more easily from the bottom of the hill, as they knew from experience.

They pulled up in a cloud of dust at the bottom, still laughing. At this time of day, high noon, there was nothing to fear. In fact there were only the crunchers to fear at any time, and crunchers stayed supine in the shade at this period of heat. The quackers over in the swamp hurt nobody unless they were molested. It was a good life.

True, there came silent moments of fear, moments—as when one looked at Utliff's distorted face—when unease crawled like a little animal inside one's skull. But then one could generally run off and hunt something, and do a little killing and feel good again.

Dyak disliked thinking. The things that came from the head were bad, those from the body mainly good. With a whoop, he ran through the long grass and hurled himself in a dive over the steep bank and into the river. The river swallowed him, sweetly singing. He came to the surface gasping and shaking the water from his eyes. The water was deep under him, in a channel scoured by the river as it curved along its course, and it flowed warm and pure. It spoke to his body. On the opposite bank, where the quacker herd now plunged in confusion at his appearance, it was staled and too hot.

Letting out a shriek of delight, Dyak fought the satin currents that wrapped his body and called to his friend. Utliff stood mutely on the miniature cliff, staring across at Dyak.

"Come on in! You'll feel better!"

Before Utliff obediently jumped, Dyak took in the whole panorama. Afterwards, it remained stamped on his mind.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Behind his friend stood the hillside that none of them had ever climbed, though their dwelling caves tunnelled into the lower slopes. He noted that three women from the settlement stood there, clutching each other in the way women always did and laughing. On the heavy air, their sounds were just audible. In the evening, they would come down to the river and bathe and splash each other, laughing because they had forgotten (or because they remembered?) that the dark was coming on. Dyak felt a mild pleasure at their laughter. It meant that their stomachs were full and their heads empty. They were content.

Behind Utliff to the other side, Dyak saw Semary appear and stand unobtrusively in a position where she could watch the two men from behind a tree. Semary was smiling, although she did not laugh as frequently as the other women. No doubt the noise had attracted her from her own settlement. Though Dyak and Utliff knew little about her, they knew this girl was for some reason something of an outcast from her own people, the three men and three women who lived toward the place where the cruncher had its current den.

Dyak stopped smiling when he saw her. It hurt him to look at Semary.

She was less corpulent and bowed than any other women he had seen. On her face was not even an incipient mustache, such as sometimes blossomed on the lips of other women; nor was there hair between her breasts. Though all this was strange, it was the strangeness that attracted. And yet — to be with her hurt. He knew this from the times when Utliff and he had stayed with her; and from that time, he knew too that she was passive, and did not fight and bite and laugh as the other women did when they had hold of you.

The being with her and the passivity hurt in his head.

As he looked at these things and thought these things hearing the heat calls of the cicadas and soaking in the heavy green of the world, Utliff jumped into the river.

It was far from being his usual flashing crashing dive. When his head appeared above the surface, he was crying for help.

"Dyak, Dy! Help me, I'm a goner!"

Alarmed, Dyak was with him in three strokes, although still half expecting this might be a ruse that would earn him a ducking as soon as he reached his friend. But Utliff's body was limp and heavy. He closed his eyes and opened his mouth and groaned.

Grasping him firmly under the arm with one hand, Dyak slid beneath him until they were both on their backs, and kicked out for the nearest tree, a gnarled old broken pine that overhung the water so conveniently that they often used it to climb out on. Struggling only feebly, Utliff groaned again, and choked as water slopped into his mouth. With his free hand, Dyak reached up and seized a projecting limb of the tree.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

He hauled himself far enough out of the water so that he could wrap his left leg round the tree trunk for leverage. It was still a terrible job to hook Utliff out of the water. As he leaned over, head almost in the river, panting and tugging, another pair of hands reached out to help him. Semary had run along the tree trunk and was beside him. With a grunt of thanks, he was able to let her support Utliff in the water while he released his friend and took a better purchase on him. Holding the tree trunk tightly between his knees, he hauled Utliff up beside him.

He and Semary rested the body along the trunk for a moment and then dragged it to the bank between them.

Utliff was dead.

Just for a moment, he shuddered violently. His eyes came open and his knees jerked up. Then he slumped back.

Almost at once, he began the horrible process of disintegration.

The limbs writhed as their muscles curled up. The flesh fell away. The flesh took on a greenish tinge. There came a frightening foetid smell as the insides revealed themselves; from them came a popping bubbling sound such as was never heard in the bowels of the living. In fear, Dyak and Semary rose and crept away, hand in hand. Utliff was not their kind any more. He had ceased to be Utliff.

They moved away from the river bank, hiding themselves among low trees and eventually sitting side by side on a large smooth boulder. Dyak was still dripping water, but the warmth of the rock helped to dry him and stop his shivering. Semary began to pluck leaves from an overhanging tree and stick them on his damp chest. She smiled as she did so, so sweetly that he was forced to smile back though it hurt him.

He put his arm about her and rubbed his nose in her armpit. She chuckled, and they slid down until their backs were against the boulder. Dyak began to peel the damp leaves off his chest and stick them on to her body. In his head, he was conscious of an affection for Semary. More than an affection. He had felt this thing with women of his own group, and he had felt it for Semary before this. The disturbance was at once pleasant and immeasurably sad. He did not know how to drive it away.

Semary too seemed full of the same feeling. Suddenly she said to him, "People wear out." It was as if she wanted to hide the subject in her head.

As always when they spoke, Dyak was aware of a great gulf that could not be bridged by words. Words were so much feebler than the things they were meant to represent. He answered, feeling the inadequacy of what he said, "All people are made to wear out."

"How do you mean? How are people made?"

"They are made to wear out. They come down new from the hills. Being new does not last . . . Their

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

faces get strange. Then they wear out, like Utliff."

With an effort, the girl said, "Did you come from the hills long after Utliff?"

"Many, many days. And you, dear Semary?"

"Only a few days ago did I come from the hills. I came . . . I came from by the smooth thing — that black barrier by the hill."

He did not know what barrier she meant. Under his skin, he felt a sort of strangeness, fear and excitement and other things for which he had no name. Her eyes stared, as if both of them were near to something they had not dared to allow inside their heads.

"Tell me," he said, "tell me what it was like, the coming into being."

Her lashes fell over her eyes. "I was on the hillside," she said. "By the smooth black barrier."

To kill the long silence, he took her by the waist and settled into a horizontal position. So they lay, with their faces close together, sharing the same breath, as they had done before, and as Utliff had done with her in the days before he wore out.

He felt there was something else he should do. But in his head no prompting occurred, and his body seemed inhabited only by dreams without a name, dreams either hopelessly happy or hopelessly sad. Semary's eyes were closed. But something told him that strange though she was, she felt the same turmoil as he.

Utliff had felt it too. When they had both lain against Semary before, Dyak had been so startled by the things in his head, he had talked about it to Utliff. He was afraid that he alone felt that strange uncertain sweetness; but Utliff admitted that he had been filled with the same things, head and body. When they tried lying close to the women of their own group, the feeling had persisted. Keen to experiment, they had lain close to each other, but then the feeling had not been there, and instead they had only laughed.

The long silence closed over them again. Semary's smell was sweet.

Dyak lay and looked up at the trees. He saw a cicada on a branch nearby, a gigantic beast that almost bent double the bough it rested on, its body at least as long as a man's arm. They made good food, but he was full of a hunger beyond hunger just now. The sound and feel of his world cradled him and ran through him.

Unexpectedly, she said, her voice warm in his ear, "Two people have become worn out today, in different ways. Utliff was one, Artet the other. Artet is a girl of my group. The cruncher got her. You know we are near the lair of the cruncher. He dragged Artet there, but her blood was already let."

"Did you forget to tell me before now?"

"I was coming to tell you when the foul thing overcame Utliff. Then your warmth near me made me forget."

Sulkily, Dyak said, "The cruncher got across the river where the waters run shallow. It used to eat

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the quackers, for I watched it often from our hill. Now that it has come across to this side, it is too stupid to go back. Soon it will starve to death. Then we shall all be safe."

"It will not starve until it has eaten all of us. We cannot be safe with it, Dyak. You must let its blood and wear it out."

He sat up, and then crouched beside her, angry. "Get *your* men to do the work. Why me? Our group is safe up on the hill in our deep caves. The cruncher is no bother to me. Why do you say this to me, Semary?"

She too sat up and stared at him. She brushed a remaining leaf from her breast. "I want you to do the thing because I want most to lie by you. I will always lie by you and not by our stinking men, if you shed the blood of the cruncher. If you will not do this for me, I swear I will go with the other stinking men and lie by them."

He grasped her wrist roughly. "You shall be with no men but me, Semary! You think I am afraid to let the blood of the cruncher? Of course I am not!"

Semary smiled at him, as if she enjoyed his roughness.

II

Dr. Ian Swanwick was growing increasingly bored, and growing increasingly less reluctant to show it. Several times, he lifted his face from his scanner and looked at the gray head of Graham Scarfe, with its ears and face enveloped in the next scanner. He coughed once or twice, with increasing emphasis, until Scarfe looked up.

"Oh, Dr. Swanwick. I forgot — you have a jet to catch back to Washington. Forgive me! Once I look into the scanner, I become so engrossed in their problems."

"I'm sure it must be engrossing if you can understand their language," Swanwick said.

"Oh, it's an easy leaguage to understand. Simple. Few words, you know. Few tenses, few conjugations. Not that I'm any sort of a language specialist. We have several of them dropping in on us, including the great Professor Reardon, the etymologist . . . I'm just — well, I'm just a model maker at heart. Not a professional man at all. I started as a child of eight, making a model of the old American Acheson, Topeka and Santa Fe steam-railway, as it would have been in the early years of last century."

Chiefly because he was none too anxious to hear about that, Dr. Swanwick said, "Well, you have done a remarkable job on this tridiorama."

Nodding, Scarfe took the theologian's arm and led him away from the bank of scanners with their hand controls to the rail that fringed the platform on which they stood. They were high here, so high that the distant spiries of New Brasilia could be seen framed between two mountain ranges. In the other direction stretched the South American continent, leaden with a heat that the air-conditioning did not entirely keep from their tower.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"If I have done a remarkable job," Scarfe said, gazing over the rail, "I copied it from a more remarkable one. From Nature itself."

Scarfe's gentle old voice, and his woolly gesture as he pointed out at the landscape before them, contrasted with the urban manner and clothes and the brisk voice of Dr. Swanwick. But Swanwick was silent for a moment as he stared over the country through which a river wound. That river flowed from distant mountains now shrouded in heat and curved below the hill on which they stood. Over on the opposite bank lay a region of swamp.

"You've made a good copy," he said. "The tridiorama is amazingly like the real thing."

"I thought you would approve, Dr. Swanwick. You especially," Scarfe said with an affectionate chuckle.

"Oh? Why's that?"

"Come now, the Maker's handiwork, you know . . . As a theologian, I thought that angle would especially appeal to you. Mine's a poor copy compared with His, I know." He chuckled again, a little confused that he was not winning a responding chuckle from Swanwick.

"Theology does not necessarily imply a sentimental fondness for the Almighty. Laymen never understand that theology is simply a science that treats of the phenomena and facts of religion. As I say, I admire the skill of your modelling, and the way you have copied a real landscape; but that is not to say that I approve of it."

Nodding his head in an old man's fashion, Scarfe appeared to listen to the cicadas for a minute.

Then he said, "When I said I thought you would approve, perhaps you got me wrong. What I meant was that the tridiorama could present you people at the St. Benedict's Theological College with a chance to study a controlled experiment in your own line, as it has done to anthropologists and paleontologists and zoologists and prehistorians and I don't know who else. I mean . . ." He was a simple man, and confused by the superiority of this man who, as he began to perceive, did not greatly like him. In consequence he slipped into a more lax way of talk. "What I mean is, that the goings-on down in the tri-di are surely something to do with you people, aren't they?"

"Sorry, I don't get your meaning, Mr. Scarfe."

"Like we said in the letter to you, inviting you here. These stone age people we've got—don't you want to see how they get along with religion? I admit that as yet they don't appear to have formed any—not even myths—but that in itself may be significant."

Turning his back on the hills, Swanwick said, "Since your little people are synthetic, their feelings are not of interest to St. Benedict's. We study the relationship between God and man, not between men and models. That, I'm afraid, will probably be our ultimate verdict, when I give my report to the board. We may even add a rider to the effect that the experiment is unethical."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Stung by this, Scarfe said, "We have plenty of other backers, you know, if you feel like that. People come here from all over the world. We've been able to synthesize life for twenty-odd years, but this is the first time the methods have been applied to this sort of environment. I'm surprised you take the attitude you do. In these enlightened days, you know. I suppose you understand how we create those Magdalenian men and women, and the iguanodons and little compsognathi and the allosaurs?"

As he began to answer, Swanwick started to pace toward the line of elevators, one of which had carried them up to the observation platform. Scarfe was forced to follow.

"After the Russo-American gamete-separation experiments in the 2070's," Swanwick said remotely, "it was only a short while before individual chromosomes and then individual genes and then the import of the lineal order of the genes were tagged and understood. Successful synthetic life was created a couple of decades earlier. It was possible to use these crude 'synthlifes' to extract the desired genetic information. It then became possible to apply this information and form 'synthlifes' of any required combination of genes. You see, I have read the literature."

"That I never doubted," Scarfe said humbly. As they stepped into the elevator, he added, "But it was Elroy's discovery that geneanalyses of defunct species could be made from their bones—even fossil bones—that set the tridiorama project into action. In was the gene formula of an iguanodon he got first. Within a year, he was selling real live iguanodons to the world's zoos. Do you find that unethical, Dr. Swanwick? I suppose you do."

"No, I don't. It was only when Elroy brought back ancient men and women by the same method that the religious bodies became interested in the question."

They had now travelled down the outside of the chamber that housed the tridiorama. When the elevator gates opened, they stepped out, both aware and glad in their different ways that they were about to part for good.

They had started unhappily, with Swanwick teetotal, and none too good a lunch served in the canteen in his honor, and an antipathy between them that neither had quite the will to overcome.

Standing, anxious to make a final pleasantry, Scarfe said, "Well, if an offense was committed, at least we lessened it here by insisting on a smaller scale. It solves so many problems, you know!"

He chuckled again, the winning chuckle to which he knew few men failed to respond. He had learned his chuckle by heart. It was rich and fairly deep, intended to express appreciation of his own oddity as well as the wonder of the world. It never failed to disarm, but the theologian was not disarmed.

"You see what I mean—size is controlled by genes like every other physical factor," Scarfe said, his sallow cheeks coloring slightly. "So we cut our specimens down to size. It

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

solves a lot of problems and keeps things simple."

"I wonder if the Magdalenian men see it quite like that?" Swanwick said. He put out a cold hand and thanked Scarfe for his hospitality. He turned and walked briskly out of the door toward the wingport where the St. Benedict trimjet lay awaiting him. With a puzzled expression on his face, Graham Scarfe stood watching him. A cold, unlovable man, he thought.

Tropez, his Chief Assistant, came up, and scanned his chief sympathetically.

"Dr. Swanwick was a tough nut," he said.

Shaking his head, Scarfe came slowly out of his trance. "We must not speak ill of a man of God, Tropez," he said. "And I can see that we have yet to master some little details that may upset purists like Dr. Swanwick."

"You know we add something new every year, sir," Tropez said. "You can't do more than you are doing. I've got the attendance figures for the Open Gallery for last month and they're up twelve point three per cent on the previous month. Though I still think we were perhaps mistaken to put in normal size cicadas. It does spoil the illusion for some people."

"We may have to think again about the cicadas," Scarfe said vaguely.

"I'm sure whatever you chose will be best," Tropez said. Saying things like that, he imagined, kept him his job.

Scarfe was not listening.

They had come to the door of the Open Gallery and pushed in. The Gallery was packed with paying customers to the tridiorama, staring from their darkness through the polaroid glass at the brightly lit scene within. Though they had a more restricted view than the specialists who, for higher prices, looked down through adjustable lenses from the observation platform above, there was a certain unique fascination at viewing that mocked-up world from ground level.

"We've got too few species in there for it to be a credible reproduction of a past earth," Scarfe complained. "Only five species—the Magdalenians, the three sorts of dinosaur, the iguanodons, the compsognathi, and the allosaurs—and the mice. I don't count those cicadas."

"Elroy Laboratories charge too much for their synthlifes," Tropez said. "We are building up as fast as we can. Besides, the Magdalenian people are the real attraction—that's what the crowds come to see. We've got ten of them now; they cost money."

"Eight," Scarfe said firmly. "Two went today. One got eaten by the allosaur, the other disintegrated. You should keep in touch, Tropez. You spend too much time in the box office."

Having thus squashed his assistant, he nodded, turned and went slowly back to the elevator.

It was the disintegrations of the little figures that worried him; he could not resist a suspicion that Elroy Laboratories limited their life span deliberately to improve their

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

turnover. Of course, the method had to be perfected as yet. The synthlifes were created full grown and unable to age; they simply wore out suddenly, and fell into their original salts. That would no doubt be improved with time. But the Elroy people were not very cooperative about the matter, and slow to answer the letters he flashed them.

The Elroy monopoly would have to be broken before real progress was made.

Still shaking his gray head, Scarfe rode the elevator back to the peace of the observation platform. He liked to watch the scientific men at work over the scanners, taking notes or recording. They treated him with respect. All the same, life was complex, full of all sorts of knotty, nasty little problems that could never be discussed . . . like how one should really handle a man like Swanwick, the prickly idiot.

Scarfe reflected, as he had so often done in the past, how much more simple it would be to be one of the synthetic Magdalenians imprisoned in the tridiorama. Why, they hadn't even got any sex problems! Not that he had, he hurried to reassure himself, at his age. But there had been a time . . .

Whereas the Magdalenians—

With the complex modern processes, it was possible to create life, but not life that could perpetuate itself. One day, maybe. But not yet. So down in the chamber the little Magdalenians could never know anything about reproduction, would never have to worry at all about sex.

"I suppose we've really created something like the garden of Eden here," Scarfe muttered to himself, peering into the nearest vacant scanner. In his crafty old mind, he began to devise a new and more alluring advertisement for his establishment, one that would not offend his scientific customers, but would rope in the sensation-loving public. "Lost Tribes in the Pocket-Size Garden of Eden . . . They're All Together in the Altogether . . ."

He adjusted the binocular vision, checking to see where the little girl was that he particularly fancied. Watching her through the lenses, picking up her tiny voice in the headphones, you would almost imagine . . .

III

The artificial sun was sinking over the tridiorama world.

Dyak and Semary had eaten. They had come across one of the giant cicadas lumbering along the ground, and Dyak had cut its head off. When they had eaten enough, they jumped in the river to remove the stickiness from their bodies. Now they were on the move again, more quietly, for they were near the lair of the big cruncher.

In the distance ahead of them, Dyak saw the barrier. That was the end of the world; tomorrow, the sun would rise from it. Now that the light was less intense, he could almost imagine that he saw giant human-like faces through the barrier.

He scoffed at the silly things that his head let happen inside it.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Their path was less easy now, and huge boulders towered above them, twice or three times their height. The fleet cruncher could easily pounce on them in such a situation. Dyak halted and took Semary's hand.

"Semary, you must wait here. I will go on. I will find the big cruncher and kill him with my knife. Then I will return to you."

"I am frightened, Dyak!"

"Don't be frightened. Hug yourself to keep happy. If the thing runs away in your direction, I will call, and you must crawl into the cleft between these two rocks where he cannot get you."

"I am frightened more for you than for me."

He laughed. "When I come back, I will take hold of you and . . . and I will hug you very closely." He did it to her then in parting, clutching her naked body against his and feeling the warm missing thing that was at once there and lacking. Then he turned lightly and ran in among the big boulders.

It took him only a few minutes to locate the dinosaur. Dyak knew the ways of the animals in his world. They were always restless at sunrise and in the evening.

He heard the creature moving in the bush. When he caught a glimpse of its greenish hide, he climbed, toe and finger, up one of the large boulders, and peered over the top at it.

The cruncher lay on an exposed slab of rock, moving its tail slowly back and forth. To Dyak, it seemed a vast beast, three times his length. Its head was large and cruel, built chiefly to accommodate its massive jaws. Its body, pressed now against the rock, was a beautiful functional shape. It had two pairs of legs, the great back legs on which it ran at speed, and the forelegs, which functioned as a pair of arms and ended in powerful talons. It was a formidable creature enough, even when its jaws were closed and you could not see its teeth!

At present, the cruncher was not easy. It lay on one flank, its great legs hunched awkwardly, its yellow belly partly exposed to the rays of the sun. After a moment, it exposed its rump to the sun. Then it shuffled again and again lay supine. Its jaw opened and it began to pant, exposing its great fangs. Still uncomfortable, it finally moved into the shade and lay there absolutely still, only a pulse throbbing like an unswallowed boulder in its throat.

Dyak knew it would not lie still for long. The creature was basking.

Having spent most of the day getting its body heat down, it was now in the process of getting it up again, against the comparative coolness of the night. In the morning, it would bask to get its heat up again, coming slowly from torpor to full activity, and then setting out on the day's hunt. Like all cold-blooded creatures, the allosaur's metabolism was closely linked with external conditions; it was little more than a thermometer with legs and teeth. To Dyak, the matter appeared more simply: the thing got restless towards sunset.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

After a brief sprawl in the shade, the cruncher moved back onto its rock, into the heat. As it went, Dyak slid off his rock. He had seen what he wanted. The cruncher often grew kittenish and accidentally felled trees and branches with its tail. There was a good sturdy length of branch lying in the other side of the clearing. Using all cover, Dyak worked his way round toward it. He trimmed it with his knife. It was crude, but it was what he needed.

He tucked it into the plaited belt he wore about his middle.

Encumbered by his armory, he now climbed a tree and crept along a branch that left him suspended almost directly over the cruncher. The only drawback with this position was that the sun was almost in his eyes.

He had not reckoned for this factor. The sun was lower than he had thought, and he must hurry. Pulling out his knife, he looked down at the cruncher—to find it looking up at him.

The big animal had finally maneuvered itself into a position of comfort, and was huddled on the rock on its belly and its head resting on its forelegs. A sound in the tree had caught its attention, and it swivelled its gaze upwards, scanning the foliage with two baleful yellow eyes.

Though it was fast on the run, Dyak knew that its reflexes in other respects were slow. Before it could move, he jumped down at it.

He landed on the rock, on the balls of his feet, just by its neck. As it moved to get up, its head came forward and it opened its savage mouth. Dyak thrust forward with the broken branch, punching forward with all his weight, holding the branch out like a shield. He jammed it between the open jaws, hard.

Instantly he ducked. The talons were coming up for him. And with the same movement, the cruncher was rising to its feet. Dyak slithered a couple of paces and jumped. He grabbed the creature's neck and swung himself onto it. It began at once to rear and plunge, growling savagely deep in its throat, so that he could feel the vibration under his clenched hands. The world spun about him, but he clung tight hoping only that the wicked tail would not sweep him from his perch.

For all the terror of those moments, when he knew that if he fell he was lost, Dyak had chance enough to see that his branch had done what it was intended to do. The cruncher's jaws were wedged open; the branch was jammed behind its teeth, and half its efforts were devoted to removing the wedge. Its forelegs were clawing its face dreadfully, drawing blood.

Keeping his hands linked, Dyak wormed his way to a better position up the neck of his bucking mount. Roaring now with its fury, the cruncher reared up, lost its balance on the slippery rock and slipped sideways, falling on its haunches among bush.

Dyak was almost flung clear, but he used the moment to grasp the creature's throat tightly with one arm and draw his knife. He struck

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

just as it leaped up and plunged anew into the undergrowth. The blade burst down through one of those glaring yellow eyes.

He was at once thrown free, as all the muscles of the creature's body were galvanized with pain. He lay half-stunned in the middle of a bush, all the wind knocked out of him. The cruncher screamed with agony and anger, and began thumping the wounded side of its head against a rock.

Feeling that if he did not move at this movement, he would never be able to move again in his life, Dyak tore himself from the bush, dodged in past that murderous flailing tail and once more hurled himself at the monster's skull. He mistrusted his ability to pierce the armored flesh of the cruncher, but the eyes were a safe target.

With something like a dive, he hurled himself at the cruncher's good eye. Using all the strength in his right arm, he brought down the weapon, down, down, deep into the squelching eye, pushing in deep through pulp and blood with all the fury of his life behind the blow. Then the great tail came around and knocked him flying.

When he regained consciousness, it was to find himself stuck head foremost in a rhododendron bush. It was a while before he could bring himself to move and drag himself out. He was scratched from head to foot, and soreness filled his left shoulder where the creature's armored tail had struck him. It was growing dark, and he was alive.

The cruncher lay in the center of a wide area of broken vegetation and churned-up soil. Its tail still slapped the ground, but it was to all intents and purposes finished. He had pierced it to the brain.

Slowly, he climbed to the top of a nearby boulder. The sky was stained red with sunset, just as it was every night, and the red was reflected in the river, so that the water looked like blood. He put his right hand to his mouth and began to call Semary.

At first his call was quiet and directed to her. Then life began to return fully to his veins, and he looked down at the mighty creature that he — he, alone! — had destroyed. Triumph filled him. Ignoring the ache, he raised his left hand too to his open mouth, and began a series of whooping calls that spread out across the valley. Louder and louder they grew, and more piercing. His lungs were inspired.

Nor did he stop when Semary ran into the clearing and stood to marvel at the defeated beast. The world should know his prowess! It was a mighty tabletop victory. END

★ ★ ★ ★ ★

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

PHOBOS: *Moon or Artifact?*

by R. S. RICHARDSON

Question: Is Phobos really a space vehicle launched into orbit by the long-dead Martians? Answer: Well—

Few of the scientific papers that have come out of Russia recently have attracted as much attention as the startling hypothesis advanced by I.S. Shklovskiy in 1959 that Phobos, the inner satellite of Mars, is a hollow sphere and therefore of artificial origin. As this paper was published in *Komsomol'skaya, Pravda,* and as the only version in English seems to have been through the Translation Services Branch of the Air Force, most people saw only the abbreviated account in the newspapers.

The immediate reaction upon reading it, for most people, was to dismiss it as ridiculous. Any scientist who would advance such a crackpot idea was crazy. Since then my own thinking on the matter has undergone considerable revision.

I am as firm as ever in rejecting the hollow-sphere hypothesis. But I would no longer relegate it to the crackpot category. Rather it strikes me as a particular solution of the problem, something like the straight-line solution to the three-body problem: interesting and ingenious but of little practical value.

The papers on this controversial

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

subject are scattered among a dozen publications, some of which are not readily available even to scientists. As a result, it has been hard to evaluate the problem fairly. Several of the most important papers have appeared where they should, in the *Astronomical Journal,* which dates back to 1849. But the Space Age has provoked such a rash of new scientific magazines, that it has become necessary now to get out a magazine to keep track of the magazines. It may be of value therefore to give a summary of how the problem developed, and the line of reasoning that probably led Shlovskiy to his hypothesis of the artifactual nature of Phobos. Readers may also be interested in the present status of this hypothesis: is it on a firmer basis today or is it losing ground?

In 1954 F. J. Kerr and F. L. Whipple announced the results of an investigation of the motion of Phobos and Deimos based upon observations from 1878 to 1942. They found their mean motions were undergoing a slow change but in opposite directions: the mean motion of Phobos was increasing whereas that of Deimos was apparently decreasing. The secular increase in the mean motion of Phobos they regarded as "well established," but that of Deimos was doubtful (or zero).

By "mean motion" is meant the average angular velocity of revolution of a body in its orbit, whether it be a planet revolving around the sun, or a satellite around its primary. For example, the Earth makes a revolution around the sun in a sidereal period of 365.25636 days. Its sidereal mean motion is thus 360°/365.25636, or slightly less than a degree per day. The moon revolves around the Earth in 27.3 days, so that its mean motion is about 13.2° per day. Phobos revolves around Mars in about a third of a day and has a colossal mean motion of 1100°.

We will concentrate our attention upon Phobos, for which the secular acceleration is better determined — and has the more interesting consequences.

A "secular" acceleration is one which occurs over such an immense interval of time that the change during a single revolution is insignificant. Thus in the case of Phobos the average decrease in the orbital period amounts to about seven ten-millionths of a second per day.

Now if the motion of a body is increasing, an astronomer immediately becomes suspicious of the space around it. For if all other sources of disturbance have been eliminated it indicates that the body is encountering a medium that is resisting its motion.

This sounds utterly paradoxical, for it is in direct contradiction to all our experience with bodies moving on or near the surface of the Earth, such as baseballs, automobiles, airplanes, etc. But an automobile on a rough road and a body orbiting in space are not in comparable situations.

The interaction of a body with a resisting medium in space is one

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the classical problems of celestial mechanics. It found a practical application some 125 years ago when Johann Franz Encke was wrestling with the motion of the comet which came to bear his name. This comet was named after Encke, not because he discovered it, but because of his brilliant work on its orbit. The comet may be said to have been discovered on November 26, 1818, by the famous comet hunter, Pons, at Marseilles.

Upon computing its orbit Encke found it could be identified with other comets that had been seen as far back as 1786. In reviewing the successive returns of this object he noted that its period was apparently decreasing. In 1789 its period was 1212.67 days, and thereafter it had been shortening at a remarkably uniform rate of 0.11 days per revolution, until in 1838 it was down to 1211.11 days. After showing that the acceleration could not be attributed to the attraction of the planets, Encke proposed his famous hypothesis of a resisting medium near the sun, which by *opposing* the motion of the comet was *increasing* its mean motion, and thus *shortening* its period.

How friction can increase the average motion of a body in space is easy enough to understand by reference to a specific example. Instead of making up a problem it is more fun to take some known member of the solar system and see what a little resistance will do to its orbit.

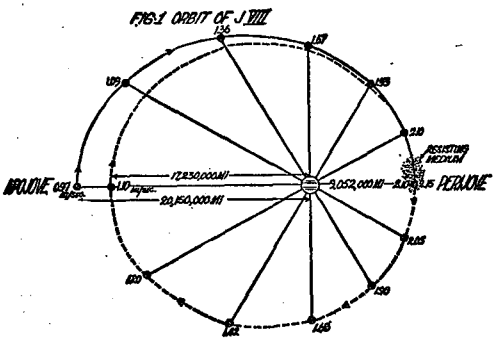
We choose the eighth satellite of Jupiter, JVIII, which is well suited to our purpose owing to the considerable eccentricity of its orbit. We take JVIII when its eccentricity was 0.38 and its distance at perijove (nearest Jupiter) was 9,050,000 miles, and its distance at apojove was 20,150,000 miles. At perijove it had an orbital velocity of 2.15 miles/sec, which decreased to 0.97 miles/sec at apojove.

The orbits of the outer satellites of Jupiter are so highly perturbed by the sun that they are scarcely recognizable after a few revolutions. One-half of this orbit of JVIII is shown in Fig. 1 by the continuous line. The period of revolution of JVIII in this orbit if undisturbed would be 735 days. Notice that JVIII is a *retrograde* satellite. That is, when looking down on the north pole of Jupiter the satellite would be seen revolving in the same direction as the hands of a clock — reversing the normal direction of revolution is our solar systems.

Now we stealthily insert a little dust into the orbit which the satellite will encounter just before reaching perijove. Friction due to the dust reduces the velocity of JVIII at perijove from 2.15 miles/sec to 2.10 miles/sec. A difference of only 5/100ths of a mile/sec would seem to be too trifling to matter. Yet the form and size of the orbit are altered profoundly.

JVIII lacks the velocity to attain its former distance at apojove of 20,150,000 miles, and is able to recede only to 17,230,000 miles. But at apojove the satellite is 3 million miles nearer Jupiter than before,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



The motion of JVIII is considered starting at apojove at a distance of 20,150,000 miles from Jupiter. It has a velocity at apojove of 0.97 miles/sec. Moving through friction-free space, the velocity of JVIII along the solid line increases as it approaches perijove. Before reaching perijove it encounters a resisting medium. Its velocity at perijove normally would be 2.15 miles/sec., but the friction reduces it to 2.10 miles/sec.

The velocity of JVIII after passage through the resisting medium is slightly lower than before. But since the size of the orbit has been reduced its velocity increases so that at apojove it is 1.10 miles/sec., instead of 0.97 miles/sec. The resisting medium reduces the period of revolution from 735 days to 628 days.

Thus the effect of a resisting medium is to decrease the velocity of a body in its vicinity, but to increase the velocity for the orbit as a whole.

with the result that its velocity is increased from 0.97 miles/sec to 1.10 miles/sec. The path of the satellite after its encounter with the resisting medium is shown by the dotted line in Fig. 1. The effect of the resisting medium is to slow the satellite down in the vicinity of perijove, causing it to fall toward Jupiter. This decrease in its distance to Jupiter *more than compensates* for its slow-down by friction. This is shown by the decrease in its period — from 735 days to 628 days. Continued encounters with the resisting medium would cause the satellite to spiral in toward Jupiter with increasing overall velocity.

That the velocity of a body increases as the distance from its primary decreases can be shown in a convincing way from consideration of the Saturnian satellite system. The satellites of Saturn make good examples since they all revolve in orbits of small eccentricity with nearly uniform velocity. Table 1 gives the mean motion and orbital velocities of the satellites working from the outermost inward toward Saturn, contrary to the usual order in which they are listed.

In passing it is interesting to notice that Dione is almost the same distance from Saturn (234,600 miles) as our moon is distant from the Earth (239,000 miles). Yet our moon takes 27.3 days to revolve around the Earth whereas Dione completes a revolution in 2.74 days — only one-tenth of the time. A striking example of the 95-fold greater mass of Saturn on the motion of its moons.

Kerr and Whipple investigated several possible causes of the secular acceleration in the mean motion of Phobos such as the resisting effect of an interplanetary medium and tidal disturbances, but found them unsatisfactory. They pointed out that whatever hypothesis was advanced to explain the positive acceleration in the motion of Phobos it also accounts for the negative (or zero) acceleration of Deimos.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

TABLE 1

Mean Motion and Velocity of Satellites of Saturn

Satellite		Distance (miles)	Period (days)	Mean Motion	Orbital Velocity (miles/Sec)
Phoebe	IX	8,054,000	550.45	0°.65	1.06
Iapetus	VIII	2,213,000	79.33	4.5	2.03
Hyperion	VII	920,000	21.28	16.9	3.14
Titan	VI	759,000	15.94	22.6	3.46
Rhea	V	327,600	4.52	79.7	5.27
Dione	IV	234,600	2.74	131.5	6.23
Tethys	III	183,200	1.89	190.7	7.06
Enceladus	II	147,900	1.37	262.8	7.85
Mimas	I	115,300	0.94	382.0	8.90

Can the secular acceleration in the motion of Phobos be ascribed to drag in the upper atmosphere of Mars?

Phobos revolves at 5,830 miles from the center of Mars, and as the equatorial radius of the planet is 2,134 miles, we are considering whatever atmosphere remains at an elevation of 5,830 - 2,134 = 3,700 miles. Speaking about the "upper atmosphere" at this elevation is rather straining the expression. It is somewhat like referring to the "financial resources" of a man who is down to his last dime.

What is the density of the Martian atmosphere at 3,700 miles? Nobody knows. Only within the last few years have we acquired any knowledge of our own atmosphere at such great elevations. We know it must be extremely low. So low perhaps that it is insufficient to produce appreciable drag on Phobos.

But other factors are also involved; let us take a look at them all. The relative change in period in one revolution depends upon:

1. Density of the atmosphere
2. Distance from the planet
3. Area of satellite presented in direction of motion
4. Mass of the satellite

Is there any way we can manipulate these quantities around to give us a solution to our problem?

This high-handed way scientists have of adjusting quantities to suit their purpose is hard for some people to understand. A scientist is as powerless as anyone else to change conditions in the universe simply by thinking about them. Often the problem he is trying to solve, however, depends upon several quantities whose values are known only roughly within certain limits. He is free therefore to adjust the quantities within these limits in the hope of finding a combination that will satisfy the requirements of his observations.

It may help to fix the idea in mind to think of a man trying to find a way of spreading his salary around so as to satisfy his creditors, and at the same time leave him

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

enough money to live on till next payday. If he pays the grocer $100 he will have no money for the dentist. If he pays the grocer $75 and the dentist $50, he will be unable to make the payment on his car. By adding here and taking away there he finally works out a solution to his problem. Similarly, a scientist often has to proceed by the same cut-and-try process, if he expects to proceed at all.

Of the four effects enumerated we will pass over (1) for the moment, with the provision that we will consider it in some detail later. The distance of Phobos from Mars (2), is accurately known from observation, and therefore incapable of adjustment. Number (3), the size of Phobos, is capable of some adjustment. What we would like to do is to adjust Phobos upward if we can. The diameter of Phobos is a kind of hybrid quantity, the joint offspring of a *measurement* and an *estimate*.

From the measured apparent brightness of Phobos, and its estimated albedo (percentage of light reflected in all directions), we can calculate its diameter. The lower we estimate the albedo the larger will be the value we get for the diameter. A body that diffusely reflects most of the light falling on its surface would have an albedo of nearly 1.00.

The moon has a poor reflecting surface, with an albedo of about 0.07. We can hardly justify an albedo for Phobos much lower than that of the moon. To blow up Phobos any farther we would have to assume that somebody had painted it with lampblack. At the most we cannot change the diameter of Phobos by a factor greater than 2 or 3.

This leaves us only (4), the mass of the satellite, which looks no more promising at first glance than the other three. The mass enters into the motion in a different way from (1), (2), and (3). There is a *direct* relationship between the relative change in period per revolution and the density, distance, and area, but an *inverse* relationship with the mass. That is, the lighter or less massive we make Phobos the more it is going to be affected by drag.

The usual way of determining the mass of a body in space is by its gravitational attraction on some neighboring body. The mass of the moon has been determined with high precision from its disturbing effect on the motion of the Earth and the asteroid Eros. But the moon is a body of respectable size with a mass of 0.0123 times that of the Earth. The gravitational method is hopeless, however, for a little tiny body like Phobos. (To borrow an expression from Shakespeare.)

Our only way of getting a mass for Phobos is by calculating its volume from its adopted diameter, and then assuming some value for its density. This would give us the mass of Phobos in millions of tons, or billions of grams, or whatever unit was like. But we are not interested in the absolute value of the mass of Phobos. What we want is a Phobos made of the lightest material possible.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

What choice of densities do we have? Mercury and the Earth have the highest average densities in the solar system of about 5.5, which is nearly the same as vanadium. The density of Mars is 3.84, about the same as that of diamond. If Phobos were made of ice its density would be about 0.92. Mimas, or Saturn I, has the lowest known density in the solar system of 0.5. But even a density still lower — of 0.3 or 0.1 — would be to little avail. What we want is a Phobos with a density of practically nothing!

But only gases have densities of this kind. And a cold-ball-of-gas model for Phobos would not be likely to win much support.

What we *can* do is to assume that Phobos is a thin hollow sphere filled with gas.

Such an assumption in solving one problem for us immediately gets us involved in another, for now we are forced to the conclusion that Phobos is of artificial origin, as Shklovskiy proclaimed in 1959. Scientists received his communication with an enthusiasm that can only be described as unstupendous. It was altogether too easy. You can explain anything about Mars if you are allowed to assume the intervention of an intelligent agency. But some were not bothered by any such considerations. I have gotten letters from irate correspondents insisting that the presence of intelligent life on Mars was now *proven* from the FACT that Phobos is a hollow shell.

Shklovskiy's approach to the problem reminds us of that of Mahomet's to the mountain: if he couldn't suit the atmosphere to the satellite, he would suit the satellite to the atmosphere.

But should we give up on the atmosphere so soon?

In 1963 G. F. Schilling made some calculations on the density of the Martian atmosphere up to an elevation of some 2600 km (1600 miles) above the surface. These were based upon the accurately known mass and radius of the planet, and reasonable limits for the temperature and pressure at the surface. The controversy over the secular acceleration of the satellites led him to extend the integrations to the orbit of Phobos and beyond. He was careful to emphasize that any extension of a model atmosphere to a height of 6000 km (3720 miles) could hardly be much more than a speculative estimate. Nevertheless, the values so obtained were based upon something more substantial than hopeful guesswork.

The limits adopted for the starting values gave bulk densities for Phobos with upper and lower limits of $6 g/cm^3$ to $0.001 g/cm^3$, respectively. The upper limit would make a ball-bearing out of Phobos, as it would be the densest body in the solar system. The lower limit makes Phobos a mere bubble. Shklovskiy may have been led to his hollow sphere model if he adopted the lowest value possible for the bulk density.

The interesting thing about Schilling's work is that it gives atmospheric densities at the orbit of Phobos sufficient to exert the drag!

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Although the values obtained for the density are admittedly insecure, there would seem to be no necessity of going to the desperation hypothesis that Phobos is a hollow sphere. In our present state of ignorance, the secular acceleration can just as well be explained if Phobos has a reasonable density about the same as that of ice. Moreover, such an explanation is applicable *only to Phobos* Atmospheric drag would not be appreciable at the orbit of Deimos.

We remarked earlier that the secular acceleration in the mean motion of Phobos was regarded as "Well established," which is not the same as being *established*. Some experts doubt the reality of the effect for Phobos as well as Deimos. They are not satisfied with the analysis of the motions of the satellites, and question of the reliability of the observations from which they were derived.

The obvious way to settle the matter is by securing more observations. This is not so easy to do. An astronomer cannot observe Phobos and Deimos on any old night that he feels the urge.

The satellites are best observed when Mars is at opposition — opposite in the sky from the Sun, and therefore fairly close to the Earth. Oppositions are about 780 days apart. Unfortunately the most favorable oppositions in August and September, when Mars comes within less than 6 million miles, occur at intervals of 15 and 17 years. The last such opposition was in September, 1956, and there will not be another real close one until August, 1971.

Only about 10 per cent of professional astronomers make any serious observations of Mars of the closest oppositions. And probably only about 10 per cent of this 10 per cent will attempt observations of the satellites.

At the opposition of 1956 I secured a series of photographs of the satellites with the 60-inch reflector of the Mount Wilson and Palomar Observatories. Later the U.S. Naval Observatory issued a bulletin requesting observations of Phobos and Deimos . . . so I decided to be patriotic and contribute my plates to the advancement of satellite theory. I packed them with loving care in vast quantities of cotton and sent them off to Washington, D.C. A card came back presently to the effect that they had arrived safely. And that was the last I ever heard of them. I have a suspicion they are now probably gathering dust in the basement of the Naval Observatory. (Or wherever the Naval Observatory keeps its old plates.) END

★ ★ ★ ★ ★

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

BY WAY OF MARS

by RON GOULART

Their love was star-crossed —their computers did not think they were compatible!

He saw her face everywhere. In the soft gray surface of his dictadesk, on the subdued reflecting fronts of the bank of memofiles, on the speaker grids of the interview playbacks on yonder wall of his office. Beyond his foot-wide view window all of Greater Los Angeles stretched, its great towering ranch style apartments white and crimson in the late afternoon sun. This sort of beauty did not touch Thomas Burnley at the moment.

He was thinking about Francesca Anders. Francesca was a tall willowy redhead who worked as a Plotter JG for a sexbook firm over in Sector 28 of Greater LA. Burnley had met her while watching a monorail crash being swept up. That was seven and a half weeks ago and he was now deeply in love with the girl. There were problems. She was enigmatic.

"How much?" asked Boke Fonseca.

Burnley looked toward the door-7 way and saw his Immediate Chief standing there, rubbing the elbow patches on his tweed coat. "Much what?"

"Wool are you gathering on Welfare Bureau time?"

It was a rib, more or less, and Burnley smiled. "Sorry, Boke."

"Francesca?" asked the Immediate Chief. He took two steps into the office and stopped next to Burnley's chair.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Burnley often confided in Fonseca about his problems. "She vanished again last night," he told him.

"That's four times since you've known her."

"Five." Burnley shrugged. "She always has a good reason. Her uncle twisting his elbow, the garbage truck carrying her off by mistake, her father's second ex-wife showing up unexpectedly to borrow some rocket fuel. I don't know. By coincidence it's always the same restaurant she stands me up at. A little Venusian place. They won't even give me a table for two any more."

"Well," said Boke, "how's the Marketing Data coming?"

"Last night she was kidnapped by a scavenger hunt that got overzealous," said Burnley. He picked a deck of punch cards off his desk top. "I guess I have to believe her," he said wistfully.

"You want to."

"Sure. I love her."

"And she loves you."

"Well, I feel she does," said Burnley. "She hasn't actually articulated it yet. But she's only twenty three and verbalization isn't as easy for her as it is when you're, say, twenty seven."

Fonseca pointed at the cards in Burnley's hands. "The Handout Department is anxious to know the Gratification Figures on the newest freebies."

"Oh," said Burnley. "I haven't completed them all yet. I can give you a rough idea. The Skid Row Bums liked the free cough drops best, then the wool sox. Negative on the picture books and pencil boxes. The Starving Waifs in Sector 84 favor near-beef soup over near-duck. Rice Surprise over Crackercrumb Jubilee 2. Some of them ate their questionnaires and that throws off the reliability factor."

"I'll tell them to reorder on the cough drops and the near-beef soup."

"I may have the final figures on the pencil boxes by quitting time."

Fonseca rubbed his elbows. "Seeing her tonight?"

"I think so."

"Try to get things worked out," said the Immediate Chief. "The Deadline Review Board hasn't been too happy with our wing of Welfare the past few weeks."

"My fault," admitted Burnley.

"It's just hard to explain love to them in a memo," said Fonseca, backing. "Take it easy." He left.

Burnley sighed. He had to get the relationship with Francesca working more smoothly.

Randy Isener was a small crewcut man in his late twenties. He did Public Relations for the second biggest Suicide Club in Greater Los Angeles. Burnley was watching for him and he signaled Isener over.

Isener dropped into the red bucket chair on the other side of the ebony table. "Why'd you pick an android bar?"

"I'm tired of live places," said Burnley. He and Isener had gone to Sophomore Campus Number 6 of UCLA together and remained

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

friends since. "Francesca always picks live places not to show up at."

"I thought you were supposed to see her tonight?"

"The scavenger hunt got her again," said Burnley. "At least she had a chance to call me in advance this time."

A barrel-shaped silver android rolled up. "Sir, sir, sir?"

"Scotch rocks," said Isener.

"Same double," said Burnley.

"Sir, sir, sir," replied the waiter and rolled off.

"Even androids can be patronizing," said Burnley. "Did I get you away from anything?"

"It's okay. I never like wakes."

"Wake?"

"My Aunt Judy," said Isener. "Died yesterday."

"Oh," said Burnley. "Well, about Francesca. I'm really just not sure what to do. I mean, I'm in love with her and I honestly feel that she loves me but I can't seem to take the right steps with her."

"You always fall for literary types," said Isener. "Like that girl who thought up billboard captions."

"No, no," said Burnley. "Francesca's not like her. She's an intensely bright and honest girl."

"Okay," said Isener, bobbing back as the android splashed down two drinks. "But she had a habit of vanishing, too. And it turned out to be with two out-of-work Martian acrobats."

Burnley shook his head. "It has occurred to me that there might be somebody in Francesca's life other than myself."

"Tip, tip, tip," said the android.

Isener stuck a token in the waiter. "Go away."

"What would you do."

Isener, narrowing his eyes and rubbing his temples, said, "You can't be objective about this. I suggest you go to the GLB."

"You're kidding?" said Burnley. "The Government Lovelorn Bureau? No."

Isener flicked a dragonfly out of his scotch. "You asked. I've gone over this Francesca problem with you twice a week for two months."

"Seven and a half weeks today."

"Whatever. Part of our tax money goes into the Lovelorn Bureau. It's fully automated. No embarrassing people to confide in. Go tell them your troubles."

Burnley made a negative gesture with his hand. "I can work this out myself."

"GLB is the one really objective agency equipped to help you," said Isener. "You keep up like this and you'll be joining one of the Suicide Clubs."

"I thought those were mostly for senior citizens," said Burnley.

"Not at all. That's where—" began Isener. "Well, I won't give you a pitch now. We can talk about population overabundance later on."

"The big thing I have against the Lovelorn Bureau. You have to agree to abide by their decisions."

"So?"

"I want advice. Not orders."

"They can get you straightened out," said Isener. "You sure about the having to abide?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Yes. They follow up every case and if you didn't do what they said it would foul up the reliability factor. So they make sure you do."

"How?"

"I don't know all the details," said Burnley. He stood up. "I'll phone and see if maybe Francesca's been turned loose yet."

"You could at least look into GLB."

"No," said Burnley. Francesca's phone screen stayed blank when he rang it.

Rain slid down the glass dome of the indoor park. Burnley shifted on the bench and watched Francesca's profile. "I'm glad to see you."

The girl smiled, looking straight ahead. "I'm glad to see you."

"This is the same park we came to the second day we knew each other," said Burnley.

"That was six or seven weeks back."

"Eight."

"You keep track," said the girl. Her red hair was nearly shoulder length, her skin pale and faintly freckled. "That's your sentimental side showing up."

"How was that scavenger hunt?"

Francesca turned and looked at him. "Tom?"

"Yes?"

"Nothing."

"What?"

"Well."

"Well what?"

"I'm very complex."

"Enigmatic."

"Yes, and intricate."

"Which is why I admire you."

"You oughtn't to."

"Why?"

"Sometime I'll tell you."

"When?"

"I don't know."

"What is it?"

"Do we always have to talk?"

"No."

A robot cocker spaniel went by again, sniffing artificial rosebuds. Three robins hopped over the authentic grass. The dome got more slippery looking overhead.

"Tom?"

"Yes?"

"There wasn't a scavenger hunt."

"Oh?"

"I met an acrobat at this party."

"Which party?"

"The one I went to the other night there really wasn't a scavenger hunt either."

"Damn it, Francesca."

"I do things like that now and then."

"Now you feel like telling me about it."

"I suppose."

"You are telling me."

"Yes, that's so."

"Why?"

"We'll talk about it later."

"When?"

"Later. Tomorrow."

"Good. When tomorrow?"

"I'll call you."

"You actually do love me, Francesca. I can sense it."

"Probably. I don't know. I'm very complicated."

"But look. . ."

The time ran out on their bench and they had to give their place

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to the next couple in line. Outside Francesca went away by herself in the rain to do some late plotting at the sexbook office.

Three and a half days later Burnley decided, after talking it over with his Immediate Chief and Randy Isener, to consult the Government Lovelorn Bureau. Francesca had continued enigmatic and he suddenly felt he couldn't cope.

All the machines he met during his first hours at the Bureau were understanding and sympathetic. They listened, clicking and humming at appropriate intervals. The whole place was discreetly and confidentially run and Burnley didn't see another person there, except when he opened the door of a Consolation Room by mistake and caught sight of a forlorn dentist crying.

The Decision Wing was a hushed pastel complex of curving corridors and soft-edged rooms. The punchcard that Prefinal Guidance had issued Burnley told him to report to Decision Room 259.

Room 259, after it let him in, proved to be small and dusky. The walls were a hushed pink and the ceiling was lost in soft shadows. The decision machine was about mansize, sharp and silver. Only a vine trailing vase on its left side and a trim of lace around its base detracted from its impression of efficient sympathy.

"I'm Thomas Burnley."

"The card," said the machine.

"Sorry." He hurried forward and shoved the punchcard into a heart-bordered slot. "There."

The decision machine wanged and ingested. "Oh boy," it said in its throaty voice. "You've got troubles, fellow."

Burnley watched the speaker grid. "I explained that all to your people here — your machines here. They took all the data down and then cross checked on Francesca through Records and Background Central at Greater Los Angeles Center. Francesca is the name of the girl I'm in love with."

"I know that, buddy. And a real screwball you've picked yourself." The machine gave a huh sort of sigh. "Giving you a decision is easy. This girl of yours is trouble. Nothing but grief. My advice to you is A. Forget it, B. Run for your life. Thank you."

Burnley poked the machine: "Come on. You're joking. I came to the Lovelorn Bureau for advice on how to win this girl. You can't say to forget her."

"Look," said the machine. "You two are too volatile to ever make it. So forget it. Run. Stop. Cease. Prospects for romance are negative. Marriage unthinkable. Go back to work and forget this stuff."

"Forget Francesca?"

"Dodge her like the plague."

"That's ridiculous," said Burnley, waving at the door. "I spent hours explaining to all these mechanisms why it is that Francesca is the object of my affection and why I'm certain that she is basically fond of me, too. Doesn't all that sort of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

information get in here to you?"

"Jack, I've still got files on her from the last three guys who came in here for advice about her. You seem — let me check — yes, you are a nice guy at heart. Have a high rating on liking animals and children. Stop with Francesca."

"How am I going to acquire animals and children to be affectionate to if I don't have Francesca?"

"You signed papers agreeing to abide by my decision," said the machine, lowering its voice. "Right? Right. Now if you don't want to be carted off to the funny farm you better split from here and stop riding me. This Francesca is a nutty broad and I say she's murder for you. Don't be a schlep."

"What kind of language is that to talk about love?" asked Burnley. "To hell with you. I don't want your damn advice. Shove it."

"So you say now. You'll have to follow the recommendations I make. The whole damn Greater Los Angeles governmental setup — Judicial, Executive and Legislative — is now empowered to give assistance in this case."

"What's that mean?"

"It means if you don't stop seeing Francesca Anders you'll get knocked on your can. All in a nice legal way."

"I'm going to keep seeing her."

The machine shrugged. "Bet?"

"How do I get out of here?"

"To the right, Jack. The panel with the cupid."

Burnley brushed past the machine and shoved out of the room. On the street again he let his face take on a grim expression. Consulting the Government Lovelorn Bureau had been a mistake. But at least he had clarified his own thinking. He was certain he loved Francesca and that she was worth fighting for.

The flycab let him out at the wrong address. But it had plunked him on the walkway and risen before Burnley could complain. The image of Francesca was strong in his mind now. Being, so far as he could tell, several miles from her apartment tower was annoying but not an insurmountable obstacle. That, anyway, was part of the price you had to pay with Francesca. You had to overcome unexpected blocks. Francesca was worth it.

Burnley spotted a phoneport down the street. He moved toward it. The day, an hour after quitting time, was a thin clear blue, darkening. In the port he punched out Francesca's number, watched the view screen, his tongue tapping on his upper lip. After several long seconds the view screen said, "That number has been momentarily put on a non-functioning basis. Break off and try again in another hour. Or so." Burnley punched the number again and got the same message.

He wondered if the Lovelorn Bureau, only a few ideas after he'd been there, had already started trying to distract him. He left the phone and started walking. He watched the sky for the lights of empty flycabs. No luck.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Burnley achieved a mixture of stride and trot and reached the Von Stroheim-Pacifica Towers in under an hour. There was something odd about the lobby guard. As Burnley passed the orange-hued potted palm that half-filled the lobby the moustached guard coughed. It was a strange thing for an android to do. Burnley hesitated.

"Tenant you wished to see?" asked the guard, his left eye almost winking.

"Miss Anders in 22S," said Burnley. "Pardon me. Are you an andy?"

"No. I'm real. I'm Twitchell of the Deviate Squad. We've had a lot of complaints."

"About what?"

"I'm afraid that's not for public release at the moment," said Twitchell. He angled around the palm fronds. "I don't suppose you have a loiterers' permit, young fellow?"

"No," said Burnley. "I've never done any loitering."

"This is your first offense, you're saying?"

Burnley backed against the lift chute door. "This? This what?"

Twitchell nodded. His moustache fell off. They both watched it spin gradually to the parquet floor. "Here," said Twitchell, handing Burnley a bright yellow punchcard. "Take this down and settle your fine. You've got two hours to pay but remember that transportation often snags at this hour."

Burnley looked at the citation. "This has already got my name on it."

"Part of Greater LA's police efficiency," said Twitchell, kicking his moustache behind the palm pot. "Now run along."

"I'll see Miss Anders first," said Burnley.

"She's out."

"I'll check." He punched the lift button.

"Lift's on the fritz."

The lobby door flapped open and a blue and gold android stepped in. "Who called a cop?" it asked.

Twitchell ticked his head at Burnley. "Take this young fellow down to the Bail Plaza to settle his fine." Smiling at Burnley, Twitchell said, "He'll get you there faster than the public transit. Right, O'Brien?"

"That I will." O'Brien grabbed Burnley and hustled him out into the street.

The black Police Service cruiser was skimming through the night sky. Burnley glanced down at the pocked floor to see what was rattling. He dropped to his knees. One of the large jointed sections of the floor was loose and flapping. Burnley waited a few seconds in the empty compartment and then tugged up the flap. No alarms sounded. Just below he saw tower tops. This was near the famed old Mexican section of Greater Los Angeles and the penthouses were all adobe and thatch. When the cruiser was gliding a few feet above a transplanted mission Burnley shoved himself out and into the night.

He made a ragged half cartwheel and landed on dusty red tiles. He

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

slid with a slatey grating sound off the mission souvenir shop roof and landed against the praying Indians tableau. While he lay flat and still and listened to the cruiser fade away Burnley tried to determine whether he'd broken anything without actually moving. He seemed okay.

A mechanical swallow hopped onto the small of his back and pecked. No one else seemed around. Burnley got to his knees, whacked the bird away, and moved through the darkness to the edge of the building. There was a regulation firepole attached to the building side. He rested his elbows on the adobe wall and then swung out. The police cruiser still hadn't missed him. With luck he'd get to the street and out of sight before there was any alarm.

There was a possibility that they were deliberately trying to keep him from Francesca. Be that as it may. Burnley was bent on seeing the girl. He needed no advice now.

By the time Burnley gained access to Francesca's apartment building again, a full three days later, she had moved. Avoiding the police and devising an entry ruse had taken much longer than he'd counted on. Three separate people had required bribing and two androids dismantling to bring it off.

Francesca had left no forwarding address. Burnley was not stopped. He carried the image of her, willowy and redheaded, always with him. He knew some kind of lover's homing instinct would guide him to her.

The tempo of the quest slowed, however. As a fugitive from the police he could no longer work for the Welfare Bureau. Boke Fonseca, his Immediate Chief, had been sympathetic when Burnley had risked a call to him. It was due to Fonseca that Burnley had food to go on, three dozen cartons of Rice Surprise. Burnley found lodgings in one of the Skid Row sectors. The better Skid Row was full up and wouldn't even put his alias on a waiting list. He was finally able to get a piece of floor space in a Skid Row suburb that didn't even get handout aid.

He was able to keep himself looking presentable enough to scout Sector 28 and try to locate Francesca at her place of work. After five careful days of reconnoitering he learned that she had been transferred to a girly book throwaway firm in the San Diego area of Greater LA.

With his remaining rice and money Burnley set off to the south. An unemployed jingle machine operator who'd had the floor space three squares over from him had told Burnley there was still something of the old Pacific Coast Highway intact. It was seldom policed and, therefore, a good bet for drifters aiming for Mexico.

The Shanghai Commission got Burnley before he was much beyond the Laguna Beach sector. Not one of the andys tumbled to the fact that he was a fugitive. They accepted his alias. As a drifter he could be conscripted by SC.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A week later, waking from a dream of Francesca and the cool sharp scent of her, Burnley found himself on a cruise ship that ran excursions between Mars and Venus His job, he learned, was to keep the piped music systems in order. Out here there was none of the smooth efficient automatic music of Greater Los Angeles. Burnley put in long cramped days cranking turn tables, goosing disc changers and nudging tape spools.

It was on the morning that he realized he had been separated from Francesca for a longer period than he had originally spent with her that Burnley led the mutiny. It was a thick warm day in a repair port near Venusburg. Burnley and six men overpowered the captain and flew the ship off toward the British Territories of Mars. Inspired by his need to see Francesca, Burnley was a very compelling leader.

He even moved two androids into joining his cause.

The landing on Mars was mismanaged and the ship crashed roughly 1000 kilometers from the nearest British colony. Sand storms and a flurry of cannibalism cut down the survivors and three weeks after the crash Burnley and an android named Gruber were alone on a vast rambling red-swarded plain. Gruber shorted-out in some obscure way and took to speaking of nothing but the capitals of states. Burnley had enjoyed discussing Francesca with Gruber but he dismantled him now and continued on alone.

Nearly a month later, at a rundown Public Oasis that the British had built and then abandoned, Burnley was sure he saw Francesca. Her enigmatic smile, her red hair flickering in the hot wind, her rangy walk. The desert raiders who captured him at this point assured him it was a mirage. Burnley would not debate the subject.

The raiders were made up of some 300 native Martians and nine British remittance men. The leader, a leathery off-green man, never tired of kidding Burnley about his mirage. One dry dusty afternoon Burnley got the man's knife away from him and killed him. This automatically promoted him to the position of leader.

Burnley developed a knack for planning. He decided that if he could take over the nearest British settlement, Fort Huxley, he would be in a strong bargaining position. He could then ask to be taken back to Greater Los Angeles on Earth. Of course England would have to arrange for dismissal of his loitering charge.

The fall of Fort Huxley to Burnley's raiders set off a large slave revolt among rival raiders and caused Britain to send additional troops to Mars. A successful merger arranged by Burnley put him in charge of nearly 8000 fighting men of the desert. He realized now that he would have to take over this whole section of Mars in order to get Britain to listen to him. So far they would not bargain. He proceeded.

The wind struck at the tent and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

swirled waves of sand under the edges. Burnley's maps were gritty. He dropped onto his favorite folding chair and frowned. He loosened his robe and unbuckled his holster. He put the blaster pistol and his best knife on top of a small table and hunched back, closing his eyes.

"At last," said a parched voice.

Burnley opened his eyes. "What?"

A thin sun-spotted man in a sand-tattered Earth suit came hopping into the tent, arms flapping. Two raiders followed, picked the small man up and gave him another toss. The man hopped and flapped almost to Burnley's chair.

"Who is this?" asked Burnley.

"He has a diplomatic pass," said one of the guards. "More than likely a spy. We brought him to you."

"I'm from Greater Los Angeles," said the man. "From the Government Lovelorn Bureau."

Burnley straightened. "Leave me with this man."

"It's taken me several long uncomfortable weeks to track you down. My name is Borman."

"You said the Lovelorn Bureau?"

Borman sighed. "Yes. And do I feel embarrassed. I don't know if you know it or not but behind the precise and mechanized smoothness of the Lovelorn Bureau there is a large human staff."

"I didn't know that."

"Well," said Borman. "What can I say? Once in a long while one of those silly machines errs."

Borman cleared his throat. "Excuse me. This desert wind dries me out. I don't know how you put up with it," he rasped hoarsely.

"I've been here two years."

"Yes." Borman sighed again. "All a mistake. The Decision Wing caught it at the last Annual Review Session. You see, Francesca Anders is the girl for you. You are the boy for her. Admittedly she had a slight restlessness problem. Simple shock therapy from one of our mobile units fixed that up. She's now fit as a fiddle and waiting for you."

"What are you telling me?"

"That we made a mistake," said Borman. "Our machines did. That's the trouble with machines. Which is why we have a special fund to track down and rectify mistakes. Yours has been one of my most challenging cases. You've cut quite a swath. Fortunately it is over at last, Mr. Burnley. You can come back to Greater Los Angeles and marry Francesca."

"Look," said Burnley. "I make my own decisions now. Nobody, real or machine, gives me orders."

Borman frowned. "You love her?"

"Nobody tells me who to love."

"I'm afraid," said Borman, sighing once more, "I'm much too late."

"Meaning?"

"You seem to have what I like to call grail seekers' trouble."

"Don't get allegorical."

"I mean," said Borman, "that you've been at this too long. The object of your quest is no longer important. The quest itself has become everything."

Burnley's eyes narrowed. "Those," he said, reaching down for his knife, "are fighting words." END

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

PARIAH PLANET

LLOYD BIGGLE, JR.

ILLUSTRATED BY GIUNTA

He had broken the law, so his punishment was just—he had to keep right on breaking it!

I

The Dalusian Bureau of Criminology was the only one in the galaxy that maintained its own space fleet. It operated two stubby, obsolescent cargo ships of a scant five thousand ton capacity. Both were equipped with the outmoded, inefficient triple-jet drive. At fifteen day intervals one of them would sink ponderously into its private berth in the most remote corner of Daluse's principal space port. Three days later it would rise again, its sequence-firing jets the despair of the Noise Abatement Commission. Its blunt, wobbly nose the perennial worry of the port's safety engineer, who could never be quite certain

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

that the wobble was an optical illusion.

Everyone knew what the ships were, but even in the Golden Comet Bar, where rumors thrived and multiplied like carefully cultivated bacteria, no one had the vaguest idea where they went.

"That's real odd," Lieutenant John Mohrlock said, thoughtfully swirling the bubbling liquid in his glass. "That's damned odd. They keep a tight schedule, and they certainly can't push those old tubs far on a twenty seven day round trip. Destination unknown, eh?"

"I don't suppose it's really unknown," a bearded spacer said. "But they sure don't publicize it. Why do you ask?"

"Because tomorrow I'll be a passenger on one of them."

Heads jerked, faces turned, ascending and descending glasses halted in midair, and even the Dalusian bartender pivoted slowly, staring.

Mohrlock spoke into the silence that abruptly engulfed the room. "What I'd really like to know is whether anyone ever comes back. You might say that I'm personally concerned."

"Why, sure, I've heard—"

"Not what you've heard," Mohrlock persisted. He directed his question along the bar. "Have any of you actually known anyone who came back?"

None of them had.

"Drink up," Mohrlock said. "It's on me—my farewell party. I don't suppose money will be of much use to me after tomorrow."

He could not say that he hadn't been warned. They talked about Daluse as far away as Vega. Keep your nose clean on Daluse. Stay out of trouble on Daluse. Mohrlock vividly remembered the morose complaint of a spacer whose brother had been snapped up by Dalusian Justice. "They don't try to make the punishment fit the crime. They try to make it fit the criminal. They think they're the greatest criminologists in the galaxy. No one can argue the point because no one knows what they do about it. Just stay out of trouble on Daluse."

Lieutenant John Mohrlock was executive officer of the first Terran ship ever to touch down on Daluse. He had a fine career ahead of him, and every intention of staying out of trouble, on Daluse or anywhere else.

But he had been attacked without warning, without provocation, by a drunken Centaurian named Zaque. If on later examination his reaction seemed unnecessarily drastic, it was none the less essential. If Mohrlock had not defended himself vigorously, he would have reposed on the burial slab, while the Centaurian occupied the Circle of Justice.

What followed was so bizarre, so utterly unreal, that he found it difficult to realize that he was a crucially interested participant rather than an amused spectator.

"Ah — Lieutenant John Mohrlock — this cutting weapon — this *knife* you say you were threatened with — where was it at the precise moment that you club-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

bed the Centaurian Zaque with the chair?"

"On the floor, I suppose. I kicked it out of his hand."

"That is already established. Precisely where was it on the floor?"

The Circle of Justice was a large circular table with an opening in the center. The nine jurists were seated around the table, facing inwards—facing Mohrlock. The judicial attire made them peculiar looking even for Dalusians. The robes accentuated their long, Dalusian necks. Their long necks accentuated the disproportionate smallness of their heads, and the smallness of their heads suggested a pertinent question or two concerning their claim to the largest brains in the galaxy. They were a mysterious people, who carefully segregated foreigners into restricted zones, and kept to themselves except for their administration of justice.

Mohrlock never denied his guilt. That would have been silly, not only because of the crowd of witnesses, but because of the Truth Test that opened the trial. *"Did you strike the blow that terminated this human life?"*

If he'd denied it, the Truth Detector would have blown its top. So he said yes, and established at the onset that he was a truthful man, for whatever that was worth on Daluse. The wire tentacles were deftly detached from his body and the Truth Detector returned to its cabinet under the table.

He had not been worried, not even when the questioning took an ominous turn. On any world with which he was familiar he would have received a prompt verdict of justifiable homicide—and Dalusian Justice, however sinister, professed none the less to be justice.

"You have said that you killed in self-defense, Lieutenant. What we would like to know is this: Why did you defend yourself so emphatically against a weapon that was securely beyond your assailant's reach?"

"I didn't know it was beyond his reach. I kicked it, but I didn't see where it went. Anyway, one jump and he'd have had it again. And I don't know what other weapons he had in those baggy pockets."

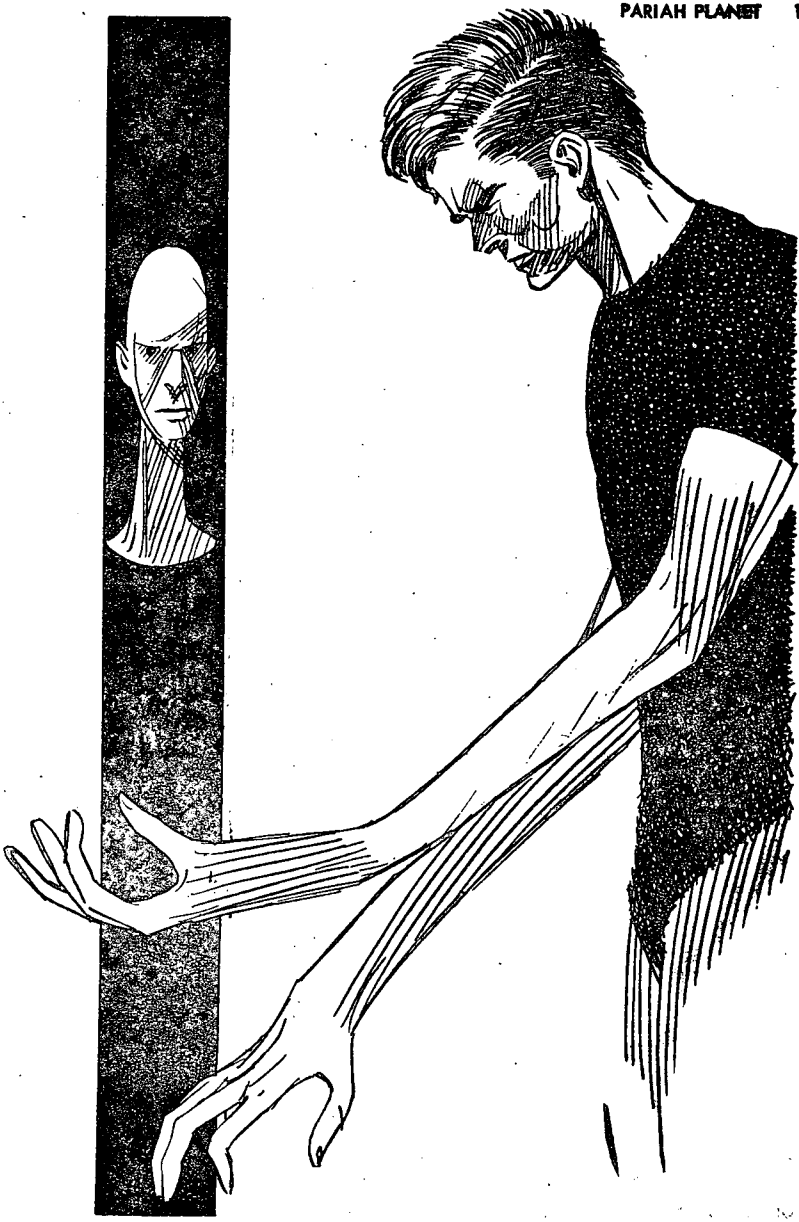
"And have you no—regrets?"

"Regrets? I didn't intend to kill the man, and I don't look back upon it with any satisfaction. But I don't see that I could have done anything differently and stayed alive—except, perhaps, not swung the chair quite so hard. He was armed, and I wasn't. I defended myself with the only weapon available, and there wasn't time to consider that Centaurians have abnormally soft heads, which I didn't know anyway."

The end came with such abruptness that Mohrlock sprang to his feet in protest. Without any discernible signal the jurists arose quietly and filed out. The witnesses were gone when Mohrlock turned a stunned gaze on the witness dais. The spectators, composed chiefly of the captain and crew of Mohrlock's ship, remained seated in uneasy silence.

Doctor Fyloid, the elderly, uniformed Dalusian who had been Mohrlock's escort since his arrest,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

opened a hinged panel and motioned to him. At first Mohrlock had taken him for a police officer; he learned only later that the man owned the imposing title of Doctor of Criminology.

He beamed at Mohrlock. "You may leave, now."

"Then—I'm free to go? They've released me?"

"Of course not. You are assigned to the Department of Criminology. You will kindly present yourself at Port Entrance X-7 at 0800 tomorrow morning. Until then you are free to put your affairs in order."

"What kind of idiocy—"

"On Daluse," the doctor said severely, "criminology is an exact science. We take great pains to keep it so. You will kindly remember that. Idiocy, indeed!"

Mohrlock took a deep breath. "All right. I'll be there."

"Promptness will be appreciated. Your ship lifts at precisely 0830."

Mohrlock had no personal affairs to put in order. His captain promised to refer the matter to a friendly embassy and explore every means of obtaining his release.

Escape was out of the question. No ships were scheduled to leave Daluse, no Dalusian would have wanted to help him, and no foreigner would have dared. Mohrlock gave himself one last resounding binge and reported as requested the next morning, seven minutes late and with a violent hangover.

Doctor Fyloid was on hand in person to escort him to a tiny stateroom on the ridiculous cargo ship. He made a flowery little speech, attesting to his own good will and good wishes, as well as those of the Bureau of Criminology and all of the Dalusian people. Mohrlock restrained himself from slugging him, with difficulty. The doctor departed, and thirty minutes later the ship was in space.

Mohrlock did not become frightened—really frightened—until he learned he was the only passenger.

II

Hell was their destination. By some oversight it had gotten onto the star charts as Bal.

"It used to be Baluse," said the young cabin boy—the only member of the crew Mohrlock saw on the entire trip. "People kept getting it mixed up with Daluse, so they shortened it."

They were headed directly toward the Dalusian sun, and as the heat steadily increased in intensity the old ship's cooling apparatus proved unequal to its task. It worked in spurts, and between the spurts the temperature shot up alarmingly. "We'll be cinders before we get there," Mohrlock said.

The cabin boy grinned. "Naw. It gets as bad as it can, and then it can't get any worse."

"Do you bring many passengers back from Bal?"

The cabin boy looked away. "Not many."

"Have you *ever* brought any back?"

"Not since I been on this run."

"What sort of place is it?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I dunno. The base is all underground. I ain't seen much of it." His tone implied that he hadn't wanted to see much of it.

Mohrlock allowed him to return to his card game, and waited pantingly for the next respite from the heat.

The heat quickly got as bad as it could, and stayed that way. They landed on the twelfth day, on the night side of as barren a world as Mohrlock had ever seen. As they came in the ship's overheated plates crackled with the cold of deep space.

There was no atmosphere. A refugee from this penal colony would be quickly frozen stiff or — if the planet's period of revolution produced day and night, which Mohrlock doubted—cooked. The Dalusians might have difficulty keeping their prisoners alive, but they certainly wouldn't be troubled with their running away.

A black-uniformed Dalusian with an unusually prominent nose came aboard for Mohrlock, indifferently introduced himself as Doctor Rudieb, the Base Administrator, and led him through a frost-lined blimp tube to a multiple air lock. The cargo frame was already open, ready for the ship's cargo, and a tractor with a bored-looking Dalusian at the controls was awaiting the signal to nudge the cargo conveyor into position.

They stomped the frost from their boots and turned into an unending, brightly lighted tunnel. Doctor Rudieb opened a door, held it open for him, and said absently, "Welcome to Bal."

"Delighted to be here," Mohrlock drawled.

The sarcasm was lost on Doctor Rudieb. He muttered something that sounded like, "Delighted to have you," and motioned Mohrlock into a room obviously designed for the interviewing of prisoners.

Mohrlock looked resentfully at the psychological apparatus that ringed his chair. A misplaced tentacle of a Truth Detector protruded from a cabinet. Rudieb's desk was on a higher level, and as he slit open an envelope and began shuffling papers he dropped occasional disapproving glances onto Mohrlock.

"Rather a clear cut case," he muttered finally, as though he'd hoped for something more complicated. "No tests called for."

"Are you congratulating me?" Mohrlock asked.

Rudieb composed his features into what he probably thought was an intimidating scowl. He looked ridiculous.

"We have only a few regulations, but those are enforced strictly. No irregularities of any kind are tolerated. Do you understand?"

Mohrlock nodded resignedly.

"I'm assigning you to Level Three. Your first regulation is that you will not leave that level unless I request or authorize that you do so. The second regulation concerns your clothing. You will be furnished with one complete outfit of black work clothing. You may buy as much additional clothing as you like, or any style that appeals to you, but it must be black. You are forbidden to wear any clothes, even undergarments,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

that are not black. Do you understand?"

Mohrlock nodded.

"Your third regulation concerns money. We employ a five week, thirty day month, and you will receive an allowance of three hundred monetary units per month, paid weekly. This will be adequate for your normal needs, and will even permit some extravagance. If you need or want more money, you can work for it. You will find an employment agency in the Administration Building on your level. If you have more money than you need, you would be wise to bank the surplus. The bank pays a generous rate of interest on savings. If you overspend or gamble away your allowance you can borrow from the bank — but the amount you borrow, plus interest, is automatically deducted from your next week's allowance. We do not interfere with your financial affairs as long as you handle them competently.

"Your fourth regulation concerns your fellow citizens on Bal—or, more particularly, on your level. You will find two types of citizens there. For convenient reference we designate them Type A and Type B. You are a Type B Citizen—as are all citizens dressed in black. You are absolutely prohibited from committing any kind of crime, either felony or misdemeanor, against a Type B Citizen. Crimes against Type A Citizens are permitted, provided that you report them in the prescribed manner.

"Your fifth regulation concerns your quota. You will receive complete information in the mail tomorrow, along with your report forms. I ask as a personal favor that you commit no crimes until you receive the report forms. It would create unnecessary complications for my office. Have you any questions?"

Mohrlock gazed at him dazedly. "I don't understand any of it!"

Doctor Rudieb scowled at Mohrlock, and scratched his nose in irritation. "It isn't in the least complicated. In this envelope you will find a list of the regulations, your identity card, and your allowance. This being the last day of the second week of the fourth month, I am issuing a prorated ten units for this week and your sixty units for next week. If you think you need further information, I'm sure you will find your fellow Type B Citizens helpful. And, of course, you are always free to write to me requesting an interview." He got to his feet, and touched a button on his desk. "Good Luck, Lieutenant John Mohrlock. I wish you a happy stay at Bal Base. A new arrival, Mr. Jones. Issue his clothing, and take him to Level Three."

A black-suited Non-Dalusian had appeared quietly in the doorway. He touched his fingers to his cap, beckoned to Mohrlock, and led him away.

Their first stop was a supply room. "Take your duds off," Jones said, "and we'll see if we can find something that fits you."

"Are you a prisoner, too?" Mohrlock asked, eyeing him curiously.

"They don't like us to say 'pris-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

oner'. Sure. Know the Golden Comet Bar in Space City?"

"I was there the night before I left."

"I held up the place. Got the day's receipts—nearly ten thousand Gold Dalusian Units. Best haul I ever made. Nearly got away with it, too. Here—put your stuff in this box. You can keep your wallet—didn't Old Blue Nose give you your allowance? But leave your outside money here. It won't buy you a bread crumb on Bal."

Mohrlock bundled his discarded clothing into the box, and dressed himself in black. Jones stamped Mohrlock's identification on the box, and shoved it aside. "All set? Then I'll take you to Level Three."

"What kind of place is it?" Mohrlock asked.

"Not bad. Not bad at all."

"It sounds like an odd kind of prison."

"I think these Dalusians are nuts. I pull a big job, and all they do — come along. I gotta get back before Old Blue Nose thinks he needs me again."

They rode a moving ramp downwards, interminably downwards, along an enormous sloping tunnel. The ascending ramp was on the opposite side, and a wide road ran between them.

Jones chatted cheerfully. "Nothing to it, really. It's almost like living anywhere. A nice town on every level, good restaurants and bars, stores that sell almost anything you'd want. The only important things is not to commit no crimes against Type B Citizens, and not to miss your quota. If you slip up on either of them, you're in trouble."

"What sort of quota?" Mohrlock asked.

"It depends. What are you in for?" he asked.

"I killed a man in self-defense."

"In that case, I don't know. I suppose they called it murder, or you wouldn't be here. So that'll be your quota. One or two a week, probably."

"One or two what?"

"Murders."

III

The Main Street could have been abducted from a small town of any of a dozen worlds Mohrlock remembered. The business buildings were neat, practical structures, some of mortared stone, some covered with grooved sheets of compressed stone. The sidewalks thronged with pedestrians, men and women, Types A and B. Colorful native Dalusian costumes mingled with the somber, unvarying shade of black. There were a few small groundcars parked at the curbs, and occasionally one moved slowly along the street, piloted by a black-suited, Type B Citizen. Overhead the distant apex of the dome was hidden by the glare of artificial sunlight.

Bewildered, fascinated, staring, Mohrlock walked slowly to the end of the business section, circled a block, circled another block, finally backed into a chair at a little sidewalk cafe and managed to order a glass of beer from a pretty young Type A Citizen waitress. While he

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sipped beer he watched the passers-by, and so dazed was he that the beer was gone by the time his mind had recorded one interesting fact: Nearly all of the Type A Citizens were Dalusians; nearly all of Type B Citizens were aliens.

His immediate concern was for a place to stay. He crossed the street and entered one of the tall buildings, where a large sign said HOTEL. The Dalusian room clerk raised both hands in dismay when he asked for a room.

"I'm sorry, sir. We have none available. I believe all three hotels are absolutely full up. I'd suggest you try a rooming house."

"Where am I likely to find one?" Mohrlock asked.

"Nearly all of the private dwellings accept roomers."

Mohrlock thanked him, and left with an envious glance at the luxuriously fitted lobby. He followed the main street, and as soon as he left the business section there were shade trees, neat stone fences, and various sized houses of a startling architectural variety. The houses had lawns of lush grass and flowers, and he caught an occasional glimpse of a vegetable garden in the rear.

He peered anxiously for a sign that would indicate a vacant room, but he saw none. The houses thinned out as he approached the edge of town, widely separated by parklike lawns or vegetable gardens. When he reached the last cross street he saw only two houses there, so he disgustedly turned away.

"Looking for someone?" asked a Type B Citizen who had come up behind him. He was a small, wiry man with pure white hair.

"A rooming house," Mohrlock said.

"They're all rooming houses."

"I was looking for a sign."

"New, aren't you?" He extended his hand. "Call me Blackie."

Mohrlock shook hands with him. "John Mohrlock."

"One name is all you need here. Better call yourself Morrie—we got too many Johnnies now. About the room—all you have to do is ask. All of these houses have vacancies. Most of the Bs like to live uptown, so it's harder to find a room there. The hotels have waiting lists. Rooms out here cost less, and me—I like the quiet suburbs better anyway. It's up to you. Better try to get settled before dark, though. The nights here are really black."

Mohrlock looked doubtfully at the glare of light overhead, and Blackie chuckled. "They turn it down in the evening, and off at night. We get regular days and nights, and beautiful sunsets and sunrises. If you think you'd like it out here, my landlady has plenty of rooms."

"Sounds all right to me."

Blackie's landlady, a Mrs. Lynez, was a Type A Citizen—a plump, middleaged, colorfully dressed Dalusian. She greeted Mohrlock noncommittally. Minutes later he found himself in possession of a spacious front room, clean, adequately furnished, and modestly priced. The ten units a week included breakfast. Upstairs rooms were available at a savings

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of a unit a week, but the house was not mechanized, and Mohrlock disliked the inconvenience of climbing stairs.

Blackie shook hands again, and wished him good night. "I turn in early," he said, "because I get up early. I got a job at the bakery. Tomorrow's the first of the week, too, and I try to get my quota out of the way early. Be seeing you."

Mohrlock was left gazing out of his front window. Beyond the edge of town was a ripening grainfield, the tall, slender stalks rigid in the motionless air. On the distant crest of a low hill he could see farm buildings. The glare overhead had dimmed perceptibly, and the first red streaks of a synthetic sunset were visible. He shook his head in disbelief, and strolled back up town for an evening meal.

That night Mohrlock slept soundly for the first time since he left Daluse, and he lay long abed in the morning in blissful relaxation. The bed was comfortable. The room's ventilation a crisp, fresh smelling contrast to the sterile blasts of compounded air he had experienced in space. The location, except for an occasional gentle snore from Blackie's room across the hall, was restfully quiet.

Mrs. Lynez had an enormous breakfast waiting for him when he got up—a steaming hot drink, chilled juices, a meat pie, cakes and syrup. He enjoyed the food, but her flat, unemotional voice quickly got on his nerves. She spoke complainingly and unbelievably about the weather. Her flowers and garden were badly in need of rain. He maintained a sympathetic attitude while doubting her sanity.

When he left the house he walked back to the main street, and then, after hesitating at the intersection, he turned away from town and strolled out into the country. What he assumed to be a synthetic horizon receded before him, until he had to stop in amazement to contemplate the unbelievable dimensions of this cavity—this one of several cavities—in the inhospitable rock of a half-frozen and half-baked planet. At least two miles wide, he thought it was, and a number of miles long, and—the glare of light overhead made it impossible to estimate the height of the roof's apex.

The main road ran unswervingly down the center of the cavity, side roads crossed it at regular intervals, and the land was pleasantly undulating. The crops looked well tended. Meat animals grazed peacefully in stone-fenced pastures. Lonely farm buildings dotted the landscape.

Midday came before he finally reached the end. The road terminated at a stone barrier, as though a curtain had been dropped across the cavity at that point. He sat down with his back against it, and attempted to puzzle some meaning out of what he had seen.

These enormous caverns had once been mines, he thought—perhaps still were mines, at their distant terminations. All highly civilized worlds replenished their exhausted mineral wealth by exploiting the uninhabited planets of their systems—and it was not unheard of for them

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to exile their criminals to slavery in the mines. As the Dalusian mines were gradually automated, and Dalusian criminology became more enlightened, the strange society of Type A and Type B Citizens could evolve. The mines no longer needed slaves, but Dalusian society had continued to demand punishment for its criminals, albeit a more humane, scientific punishment — a perfect punishment.

That much seemed clear enough, but he was unable to carry his reasoning to any kind of satisfactory conclusion. What *was* the punishment? A quota — a quota of crime? Could a criminal be punished by forcing him to commit additional crimes? He thought long about it, and the longer he thought, the more he became convinced that he was the victim of a bizarre joke.

Mohrlock returned to town under the riotous contortions of a synthetic sunset. As he entered the house Blackie bounded out of his room to meet him. "I been wondering about you," he said. "Nobody saw you in town today."

"No one knows me," Mohrlock said. "But I wasn't uptown. I went for a walk in the country."

"Without food? You shouldda got a box from Ida. She's a B—has her own business uptown, box lunches. She does real well. Owns a house and groundcar, and a big bank account. B's that have jobs, or get tired of the restaurants, buy her lunches. About no one knowing you —you'd be surprised. A new B isn't hard to pick out. You missed something, not being up town today. It's the first of the week, and a lot of the B's try to get their quotas out of the way early. It's almost worth the price of admission to watch the pickpockets operating. I doubt if an A can stick his nose out on the first of the week without getting his pocket picked. Mrs. Lynez left your mail in your room. Your quota stuff, probably."

Blackie followed him into his room, and watched as he ripped open the fat envelope and spilled out its contents. There was a package of large envelopes, addressed with a single word: OFFICIAL. There was a book of detachable forms, coded for machine filing, and a quota assignment card.

LIEUTENANT
JOHN MOHRLOCK
WEEKLY QUOTA:
ONE MURDER

And below, in fine print: *Regulation four: Crimes against Type B Citizens are prohibited.*

Blackie slumped onto the bed, and stared at him incredulously. "Murder?"

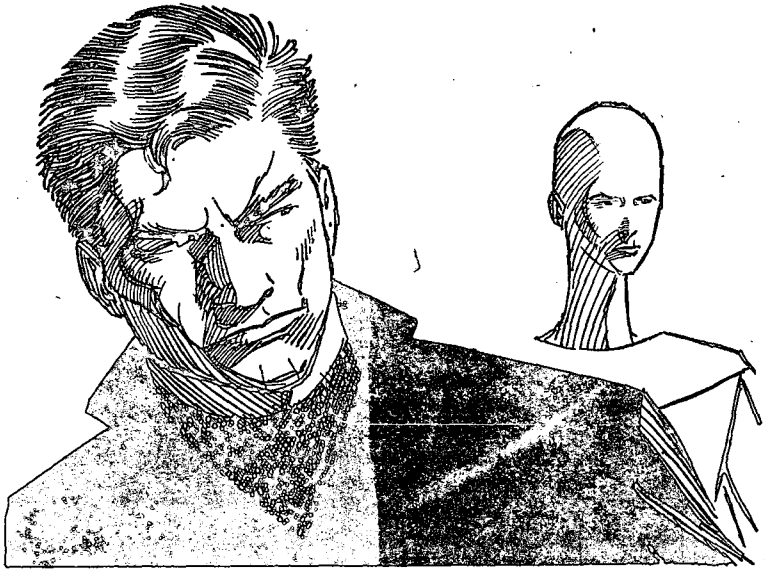
"I killed a man in self defense," Mohrlock said bitterly. "The Dalusians called it murder."

"I'm sorry," Blackie said, avoiding his eyes. "I shouldn't have looked."

"Why should my quota be a secret?"

"It just is. A man's quota is his own business, unless he wants to talk about it himself. If I was you I wouldn't mention it to anyone.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



We've never had a murderer on this level—not that I ever knew about. I thought maybe I could help you get started, but murder—you'll have to handle that by yourself. Are you sure you're on the right level? I had it figured that the different levels were for different kinds of crimes. We're mostly pickpockets and various kinds of robbery on Level Three. Five is supposed to be the violent level, where all the vicious criminals get sent. I thought murderers went to Level Five."

"Doctor Rudieb said Level Three."

"Then you're in the right place. Maybe Five got crowded. Or maybe they're changing this level. I hope not. It's always been a pretty nice place."

"It doesn't make sense," Mohrlock muttered. "None of it makes sense."

"It makes a lot of sense. The way I have it figured, the Dalusians send their own criminals here as A's, and the foreign criminals here as B's. Our punishment is that we have to keep on committing crimes, and their punishment is that they have to be the victims."

"Very considerate of them to let us have the better deal," Mohrlock said dryly.

"It may seem that way at first, but after a while you get to wondering. The A's don't talk much about their problems, or about anything else, but I get the idea that they're just plodding along like we are, trying to save up for something. Not knowing what minute

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

some B will decide to make a victim out of them, and there go their profits for the week. It must be hell for them, but its no fun trying to decide who to rob on your next quota, either. I've got so I watch a man until he takes his receipts to the bank. Then I know I won't be hurting him so much."

"I say it doesn't make sense. We can rob anytime we feel like it, and yet they give us a weekly allowance?"

"That's part of the punishment — crime without profit. We have to turn in our take when we file the report. It says so right on the card. Once when I was a bit short I held out ten units, and they deducted it from my next week's allowance, with interest."

"Supposing I don't do my quota. What happens then?"

"Get that idea out of your head right now!"

"What could they do?"

"Plenty. Oh, they might dilly dally a little, impose a penalty, give you warnings — or they might not. You'd disappear, and only Old Blue Nose would know where. There are rumors — but never mind. Do your quota, and behave yourself."

"What are the rumors?"

"You'd be sent to a lower level — "

"What would be so terrible about that?"

"As an A. *If* you think committing crimes is tough, just think how you'd enjoy being on the receiving end."

Mohrlock looked dumbly at the report forms. His name and identification were printed on the front of each card. Blanks were left for him to fill in the type of crime and the location. At the bottom was a warning: *Caution: Any property or money taken from the victim must be returned with this report. Crimes against Type B citizens are prohibited.*

On the reverse side was a single question: *Why did you select this victim?*

"Look," Blackie said softly. "Lay off Mrs. Lynez, *please.* I been with her ever since I came here. She's quiet and don't say much, but she's always been nice to me. And Porky, that's the A that runs the Third Level Bar. You can tell to look at him that he's worrying his heart out about something, but he never mentions it. I guess all the A's got plenty to worry about. There's old Scrubby, too, that runs the hand laundry, and does a lot better job than that dratted Autolaund across the street, but doesn't get much business because it takes him longer. I held him up once, when I first came here, and his whole day's receipts were only — but skip it. You'll do what you gotta do. It's just — well, we get to know some of these A's pretty well."

"Whatever I do," Mohrlock said. "I'm certainly in no hurry to be doing it."

"No. You don't have to rush it. You've got five more days."

IV

The next morning Mohrlock wandered about aimlessly, made

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

new acquaintances, explored the town, from the bakery at one side to the group of small factories at the other. Everywhere it bustled with early morning activities. There were postmen briskly making their rounds — B's, all of them, Doctor Rudieb taking no chances on someone including the mails in his robbery quota. As Mohrlock thought of this he smiled at the recollection of Rudieb's own black uniform. There were small trucks bringing in produce from the farms, and large trucks bringing in supplies from other levels and taking away the Third Level's surpluses.

Mohrlock joined the morning shoppers as soon as the stores opened. He built his wardrobe up to respectable proportions. He patronized a barber shop and a tobacconist, broused absently through stores, spent some time in a groundcar showroom, even allowed himself to be interested in displays of building materials and agricultural implements.

But he found himself turning away uneasily whenever a Type A citizen approached him.

Weekly Quota: One Murder. Was it possible that they were serious, that they actually expected him to commit one murder each week?

At a real estate office he studied listings of farm properties for sale, of town lots available for building purposes, of vacant stores and offices where an ambitious B with money saved might develop his own business. He visited the Administration Building, which housed the bank and the post office — both staffed with Type B employees — and opened a bank account.

In the small room marked ADMINISTRATION Mohrlock found a Type B clerk reading a book. "There seems to be some mistake about my quota," he said. "Who do I see about it?"

"Write to Doctor Rudieb," the clerk said promptly. "Was it about a revision?"

"Revision? I'm new here, and—"

"Did you receive a quota card?"

Mohrlock nodded, and handed it to him. He glanced at it, blinked, handed it back. "What's the mistake? Have they got you down for the wrong crime?"

"No. I mean — surely they don't expect — "

"I get you. That's just what they do expect—one murder a week," he said.

"Would it do any good for me to write to Doctor Rudieb?"

He shook his head. "If it was murder that put you here, murder is what you're going to do. One a week, like your card says."

"What happens if I don't?" he asked quietly.

The clerk regarded Mohrlock with interest. "In all the time I've been here," he said with a grin, "and figure it's about eleven years, now, I've never known anyone who had the nerve to skip his quota and find out. You don't look nervy enough to be the first one. You'll do your one murder a week, and like it. And if you're worried about the A's, forget it. There isn't a one of them who wouldn't be better off dead."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

At the sidewalk cafe Mohrlock drank beer and carefully scrutinized each A who passed. In two hours he saw only two who were not Dalusians. B's who had failed to meet their quotas? And what could the A's have done to deserve this? Were they political prisoners?

Weekly Quota: One Murder.

"I won't do it," Mohrlock announced aloud, and then quickly looked up at the A waitress who was clearing off the next table. She did not seem to have heard him.

Somehow he felt immeasurably better, and he spent the remainder of the afternoon drinking beer and enjoying the artificial sunshine.

He finished his evening meal just as the stores were closing. There was an exodus of A's who worked in them. He found himself walking behind one as he returned to his rooming house. It was an elderly little Dalusian, whose wife was undoubtedly someone's landlady. Mohrlock overtook him and was moving around him just as he turned a corner, and they collided. Mohrlock muttered, "Sorry," and the Dalusian said softly, "I beg your pardon."

He plodded off along the side-street, and Mohrlock stood watching him. When he turned in at his house, his wife was at the door waiting for him.

Blackie was at the door waiting for Mohrlock. He said anxiously, "Did you — "

Mohrlock shook his head. "I wasn't in the mood for murder today."

"When you get around to it, better do it where there's some light. Or if you think you got to do it in the dark, be sure and ask if it's an A."

"Ask?" Mohrlock repeated blankly. "You mean — they'd tell?"

"Sure. A's never resist. Those of us who do armed robberies, we're issued weapons, but no ammunition. We say, 'Hand over your money,' the A's hand over their money. If it's light you couldn't get a B by mistake, on account of the clothes. In the dark you could. If you was to try a holdup on a B, he'd let you know, and that would be that. But your quota being murder, if you was to whop a B from behind thinking he was an A he wouldn't have a chance to let you know, and you'd be in big trouble. So I say — if you aren't *sure* it's an A, better ask. Just a suggestion, you being new here."

"Thanks," Mohrlock said.

Blackie was engaged. His fiancee, a gaunt, middleaged woman whose features suggested a melange of planetary origins, worked in the bakery with him. They were saving their money to build a house. Blackie had already purchased three lots in a choice location.

Mohrlock happened onto them in a tiny lunch room that called itself the Denebian Tea Room and pretended to have an atmosphere. Blackie interrupted an argument only long enough to invite Mohrlock to join them.

"Aw, stop complaining, Bella," he said. "Get it over with — it don't take long. Right, Morrie?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Mohrlock politely refrained from commenting.

"Bella always puts off her quota to the end of the week," Blackie went on. "I keep telling her — look. There's an A with her arms full of packages. Nab her before she gets out of sight."

"Oh, all *right*!"

She flounced away, caught up with the woman, and rifled her dangling handbag with a motion so deft that it left Mohrlock blinking. She hurried back and sat down, breathing heavily, to fill out a report form. "'Why did you select this victim?' Bah! If I could get my hands on Old Blue Nose, I'd show him a new use for finger nails. 'Because she happened to be here, that's why'." She dumped the report form and the contents of the woman's purse into an official envelope, sealed it, and tossed it to Blackie.

"Three to go," Blackie said. "Doesn't the waitress have anything in her apron pocket?"

"Just a handkerchief. I'd be ashamed to report *that*. So I put it back."

"Finish your sandwich, then, and we'll try the grocery stores. And next week, how about doing a little work on the first?"

"First — bah! You can't make a dip on the first without finding two other B's already got their hands in the bag."

Blackie grinned. "How's business with you, Morrie?"

"Nothing new," Mohrlock said.

"Better get with it. Four more days, counting today."

"You mean he ain't done his quota, either?" Bella demanded.

"He's new here. Come on — swallow your sandwich."

They hurried away. Mohrlock turned in the opposite direction and walked slowly, looking into the store windows.

Suddenly he saw a familiar face looking out at him. It was the Dalusian he'd collided with the night before. A nondescript little clerk in a nondescript little shop that sold trinkets and seemed to do very little business. Mohrlock went in and bought an ashtray for his room, though he had three already. He was waited on politely without a sign of recognition.

He could not say, afterwards, what impelled him to be waiting for the clerk when he left for home that evening. Mohrlock followed discretely until he returned, and then forced himself to hurry on without a backward glance.

That night he had his first nightmare. His hands were clutching the little clerk's long, Dalusian neck. He squeezed with all of his strength, choking, choking, choking, while arms threshed helplessly and legs churned and a rattling, sticky death set the face in a grimace of terror. He awoke soaking with perspiration, and heard Blackie knocking sharply on his door.

"I thought maybe somebody mistook *you* for an A," Blackie said.

"I guess I had a nightmare," Mohrlock said. "Sorry."

He lay awake until morning because he was afraid to let himself go back to sleep.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Weekly Quota: One Murder.

Quota. Mohrlock winced whenever he heard the word. He attempted to thrust it from his consciousness, but it returned. Inevitably it returned. He would overhear B's conversing — "Done your quota yet?" — or his book of report forms would catch his eye, or the word would slip into his mind of its own sinister persistence.

Weekly Quota: One Murder.

He had three more days in which to commit a murder. He was ordered — commanded — to murder, with horrendous consequences implied if he did not.

Perhaps it *was* a just, a perfect punishment — or perhaps it would have been, if he were a murderer. But to force him to take a human life intentionally because he had taken one accidently seemed a monstrous miscarriage of justice.

And to take another life next week, and another the week after that, to live out his existence in this lazy, purposeless environment, murdering, murdering —

He wasn't going to do it. He'd already decided that, there was nothing to worry about, the issue was closed — so why did the word, the idea, *quota* upset him? Why had he followed the little clerk home? Had his subconscious mind already selected his first victim in order to meet his weekly quota?

The next night he followed the clerk home again, followed him almost to his doorstep, and stood in the dusk looking at the door long after it had closed silently behind him.

V

"It finally rained last night," Mrs. Lynez said at breakfast, her voice as devoid of feeling as it had been when she complained about the lack of rain.

"Glad to hear it," Mohrlock said good naturedly, wondering if she were joking or if her mind had taken its final plunge. But when he got outside he found the walks moist and droplets of water on the grass. That afternoon he asked Blackie about it.

"It's a kind of sprinkling system," Blackie explained. "It doesn't exactly rain, it just makes a heavy mist. They only turn it on at night. It clears the air and settles the dust."

"I was wondering where the water comes from. Those two junky cargo ships certainly don't bring it in."

"The base probably reuses its water, just like a space ship. There's supposed to be a big reservoir on the lowest level, and anyway, a lot of big ships come to pick up ore. Maybe they bring water. They might as well bring something."

Mohrlock acknowledged the truth of this, and revised his thinking about the supposed cost of Dalusian criminology. If the big ships would otherwise be cruising empty on their low cost sunward run, supplies put down on Bal could be considered virtually free of transportation expense. The base produced some if not most of its own food, there was an abundance of solar power on the other side of the planet, and the pris-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

oners supplied whatever labor was needed. Perhaps, in those small factories, they even manufactured things for export.

Mohrlock was determined not to approach the little clerk again, so he bought one of Ida's box lunches for his evening meal and walked out into the country. He spent the remainder of the afternoon seated under a stunted tree watching an A farmer and his wife weed their vegetable garden. The B's had machinery; the A's worked by hand—unable to save up enough money for simple hand tools, Mohrlock reflected. All of their profits were snatched up by the relentless quotas of thieves and robbers and pickpockets. Mohrlock fell to pondering the meaning of life as lived by an A, and wondered if he could convince himself that the murder of one of them might be considered an act of mercy. He decided that he could not. The A's were free to take their own lives, and yet Blackie said that he'd never heard of an A suicide. Perhaps their terms in the purgatory of Bal Base were limited, and their fortitude derived from the knowledge that they would ultimately be released.

As darkness began to fall the woman went back to the house. The husband worked on alone until it was too dark for him to see, as though defying Mohrlock to do something about it. Finally he turned toward the house, and Mohrlock got to his feet, not to follow him, but to walk wearily back to town.

Blackie met him at the door with a question. "Did you—"

Mohrlock shook his head.

"Look, fellow. Tomorrow's the end of the week."

"What the hell do I care?" Mohrlock snapped.

"Sorry. Just thought I'd remind you."

Breakfast. Mrs. Lynez's flat voice sounding exactly the same while saying something different: "This is the last day of the week."

It was Mohrlock's seventh day on Level Three, and it surprised him that it had taken him so long to become fully aware of the deadly monotony of the place.

Remark overheard on a street corner: "Got your quota in?"

Even when different things happened, they happened in the same way—they *felt* the same, just as the humidity felt the same, day after day, and the temperature felt the same, and his breakfast looked and tasted the same, and the same A's and B's could be seen ever day at the same time and the same place, dressed in the same way and doing the same thing—as if a master automated control regulated everything and everybody.

A pickpocket, slapping a wallet onto the bar and scribbling the necessary information onto a report form: "That does it for this week. Finally."

Mohrlock slowly passed the little Dalusian's shop. The man stood in the window, as usual, gazing blankly at the passersby. Mohrlock wondered if it was the man's long Dalusian neck that attracted him—his fingers seemed irresistably drawn to it. His

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

own ultimate purpose in life seemed to be the throttling of that one Dalusian neck. He turned, passed the window again, passed it a third time. The Dalusian continued to gaze blankly.

On the next corner Blackie and his fiancee were arguing. "What do you want to do—wait until they've all gone home? You only need one more. Get that one."

"Oh, all *right*!"

Mohrlock turned back before they noticed him, and thus avoided Blackie's inevitable, "Did you—" He ducked into a bar, and before he could order, two B's bought drinks for him. "Celebrating," one of them said. "Just finished our quotas. Every week we tell ourselves we'll get them out of the way early, but we never do."

Mohrlock did not thank them.

"Look at the idiots," said an elderly B who shared Mohrlock's table at the sidewalk cafe. "Half of 'em try to do their quotas on the first of the week, and the other half wait until the last day. Me, I always work the middle. Sometimes I'm the only one operating."

Mohrlock started to walk around the block, saw a B lurking near the rear entrance of a store to waylay the proprietor, and frantically retreated to the nearest bar. "Got your quota in?" grinned the B standing next to him. Mohrlock wanted to scream into his face, "No, I'm one murder short!"

He wandered into a hotel lobby, and killed some time watching a fast game of *Free Fall*. The stakes were high, the players recklessly squandering the last of their week's allowance.

"Deal me out," said one, raking in a fat pot. "I haven't finished my quota."

"Oh, for God's sake—a quota hopper! Who let him into the game?"

Mohrlock followed him out, and again walked past the little Dalusian's shop, carefully looking the other way. "If I must—" he said.

He walked past again, staring at the alluring neck. "If I must—" The thought gagged him, but at the same time he realized that his resistance, all of his noble resolutions, had vanished. "If I must—I must."

The clock on the Administration Building bonged the hour. Customers drifted from the stores, doors closed. Mohrlock walked unsteadily to the corner, took cover in the doorway of a shoe store, and waited. Clerks were still at work in the shoe store, arranging stock, taking an end-of-the-week inventory. Lights were on in all the stores. Mohrlock noticed that his hands were trembling. He thrust them into his pockets.

Finally the lights began to go out, and eventually the little Dalusian appeared. He walked slowly, with mincing steps, head bowed as if lost in deep thought. Mohrlock lurched after him, pulse pounding, his breath coming in laborious, whistling gasps. He quickly overtook him, and followed him, closely; and though it was nearly dark, the long white neck gleamed palely in the dim light, and beckoned him on.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

At the Dalusian's corner he stepped forward boldly, and jostled him. "Excuse me," he muttered, hands poised to leap at the throat. "Can you tell me what time it is?"

"What time it is?" the Dalusian repeated. Something in his manner made Mohrlock hesitate. Clothing rustled as he reached into a pocket. "What time it is?" he said again. He searched another pocket. "I am sorry. My watch has been stolen."

Mohrlock watched numbly as the pathetic creature made his way up the street. He had been robbed, he had been stalked by a murderer, and yet he was miraculously returning home safely.

Mohrlock wheeled, and started to retrace his steps. Suddenly it was quite dark, and he could see nothing at all when a voice snarled from a clump of bushes, "Stick 'em up!"

"Go to hell!" Mohrlock snapped.

The voice chuckled. "Sorry. Couldn't see you was a B. Seen any A's around here?"

"No."

"Drat it!! Guess I'll have to take one of the all night bars. Hey—want to join me?"

"No."

"Got your quota in, eh? Lucky. Every week I keep telling myself — "

Mohrlock lengthened his stride, and left him behind. He spent most of the night drinking himself into a state of sullen stupefaction. When his money finally ran out he staggered home, and dropped into the chair in front of his window to sit looking out at the darkness. He heard Blackie getting up, heard him

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

talking quietly with Mrs. Lynez while he ate his breakfast, heard him leave for his bakery job. Streaks of red appeared in the sky as the glamorous synthetic sunrise revealed itself and brought the dawn.

Mohrlock went to the kitchen. "I'm not hungry," he told Mrs. Lynez. "I don't want any breakfast."

She nodded indifferently, and returned to her room in the rear of the house. He looked after her speculatively, studying her long, white Dalusian neck. When he realized what he was doing he staggered back to his own room and threw himself onto the bed with his face in his hands.

VI

He expected—but he did not know what he expected. The week had passed, he had failed to make his quota, and for all that, life on the Third Level went its monotonous way. The B postman brought him his official envelope, but it contained only his allowance for the next week—six crisp ten-unit notes. He gave one of them to Mrs. Lynez for his room rent, and she gave him a receipt.

He had fought a battle with himself, and he had won. He would never again flinch when he heard the word *quota*, never need to tabulate the days of the week, to calculate the time remaining in which to murder. The threat of an unspecified punishment held no terror for him. He even considered the life of an A victim vastly preferable to that of a B murderer. He had *won!*

With his sudden upwelling of exuberance his appetite returned, and he cancelled the cancellation of his breakfast. He talked with Mrs. Lynez, even attempted unsuccessfully to coax a smile out of her. He strolled through town for a laugh at the first of the week quota snatchers.

And when, later in the day, he met Blackie on the street, he was able to answer his unasked question with a shake of his head and a smile on his face.

"Better let me buy you a drink," Blackie said.

"No," Mohrlock told him. "I'll buy you a drink."

"You really didn't—all right. Buy me a drink. And you can't say I didn't warn you."

The official notice came that evening. By special messenger.

Mohrlock opened the envelope with trembling fingers, and jerked out a letter.

A form letter.

Even Doctor Rudieb's circular signature was reproduced, and the two blanks were filled in with a clumsy scrawl. "According to my records your quota for the past week shows a deficiency of *ONE MURDER*. I am, accordingly, revising your quota for the present week to *TWO MURDERS*. If your records are at variance with mine, kindly notify me immediately."

The letter slipped from Mohrlock's fingers, and Blackie picked it up, glanced at it, and remarked, "Old Blue Nose must have been in a good mood today."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I thought I'd won," Mohrlock muttered. "But I didn't. It wasn't a victory, it was just a postponement."

"What's that?"

"Now it starts all over again. Five more days."

"Right. And if you want my advice, get one of those murders out of the way—what's the matter? You look sick."

"I guess I don't feel so good."

"Better get to bed. You didn't get much sleep last night."

Mohrlock shook his head. "I'm going into town and get drunk."

That night he had his second nightmare. And the next night another. An illusion so realistic and horrifying that it left him with a morbid fear of sleep. For two nights he did not even go back to his room. When Blackie finally tracked him down on the fifth day of the week, he was intoxicated, exhausted, untidy, unfed, and striking out at anyone who approached him with a belligerence inspired by terror.

He pointed a finger at Blackie. "I won't do it. Don't care about the damned quota. Don't care what they do with me. Just won't worry."

"Fine," Blackie said. "You're shaking like an advanced case of Deep Space Tremens. If you're not going to do it, and you don't care about the quota, and you won't worry, why are you trying to kill yourself?"

"Because I'm afraid I *will* do it," Mohrlock said, and wept.

"It's the doc for you," Blackie said, and hauled him toward the door. Mohrlock staggered along meekly as far as the first intersection, and then refused to go any further.

"I don't walk down this block," he announced.

"Why not?" Blackie demanded.

"Guy works there I don't want to see."

"All right—we'll go around the block," Blackie said patiently.

Eventually they reached the clinic in the Administration Building, and a B doctor gave Mohrlock an injection. He awoke in his own bed the next morning, very much alive but rather wishing that he wasn't. During the few hours that he was relatively sober he managed to write a letter to Doctor Rudieb, telling him precisely what he could do with his quota. The next thing he knew it was the first day of the following week, Blackie had him back at the clinic again, and there was another form letter from Doctor Rudieb. His quota for the current week was three murders.

"I know a guy," Blackie said, "who sometimes picks up extra money by helping out with a quota. His robbery rates are reasonable, but I don't know what he'd charge for murder, or if he'd do it. I could ask him."

"No."

"You should get a job—something to keep your mind occupied."

"Good idea," Mohrlock said. "What sort of job could I get where I wouldn't see any A's?"

"Well—"

"That's what I thought. The A's have done nothing to me, and I don't want to do anything to any of them.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

But I feel certain that I'm going to commit a murder if I stay sober."

"That's what you're *required* to do!"

"Did you ever imagine your fingers around one of those long Dalusian necks? If I ever get mine there just once. I'm lost. A man's entitled to a little moral integrity, even if he's a convicted criminal. My moral integrity demands that I never needlessly harm another human—whether it's by picking his pocket or by taking his life. I was awfully close to it, that first week. I shudder now just to think about it. I never want to get that close to it again. So I'm going to get as drunk as I can, and stay that way. It takes some coordination to commit murder without a weapon, and I figure if I'm too drunk to walk I'll be too drunk to murder."

"It's your funeral."

"Better my funeral than one of the A's. Blackie, is it possible that deep down inside of every one of us there's an urge to kill?"

"I never felt it," Blackie said.

"Maybe that's because no one ever gave you a murder quota."

Even while Mohrlock was intoxicated the little Dalusian clerk continued to haunt him. He gradually developed a drunken obsession that the clerk was somehow to blame for his troubles, that the man was attempting to entice him into a murder. He went one day with a rock, and threw it at the shop window. It was then that he learned that the windows weren't glass. He threw the rock; it bounced back. He threw it again and again; it bounced again and again, until finally someone stopped him. Through it all the little clerk stood in the window gazing blankly at the passing pedestrians and paying Mohrlock no attention whatsoever.

A fourth week came and went, with a revised quota of four murders. In a surge of drunken anger Mohrlock mailed the form letter back to Doctor Rudieb. The following day he mailed his quota card, and then his book of report forms, and then his identification card. When he had nothing more to send he sealed and mailed the official envelopes. "My quota for the day," he would say proudly, depositing another empty envelope at the post office.

The other B's seemed uncertain as to whether he was merely drunk, or insane. When he was capable of thought on that subject, he felt positive that he was both. Even in his drunkenness he again started following the little clerk home at night, but he staggered so much, and fell so frequently, that he was never able to catch up with him.

Finally there was an interview with Doctor Rudieb, with Mohrlock seeing the doctor dimly through a cloud of alcohol, as from afar. The doctor shook his oversized nose sorrowfully and lamented the fact that he had given Mohrlock every chance and received no cooperation in return. Mohrlock attempted to obliterate the enormous distance between them by shouting his vituperation. The results neither satisfied Mohrlock nor pleased the doctor. Mohr-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lock left the room with a single word echoing and reechoing through the drink fogged corridors of his warped consciousness: *reassignment.*

VII

"Man, oh man," the young cabin boy said. "You were really in orbit."

"Where am I now?"

The boy chuckled. "In space—where else? Didn't you notice the heat?"

"I don't believe I did," Mohrlock said. "But I do now."

"And that strap isn't to hold your pajamas up. You kept floating off your bunk. Here—drink this."

Mohrlock swallowed, and made a face. "What is it?"

"Beats me. You've been having it every four hours since they brought you on board. Don't you remember?"

"No. And I can't believe that I'd forget *that* taste in a hurry."

"Man, you were beyond tasting anything."

"Where are we going?"

"This ship only goes two places, and you're coming from one of them."

"I see. I think something was said about reassignment."

"I'd say you're doing real good if you remember that much. When they carried you in here I thought you was dead."

"I was," Mohrlock said soberly. "That's exactly what I was—dead."

"Sure. And with a little luck you'll be sobered up by the time we make port."

On Daluse he found a Bureau of Criminology escort waiting for him. He was whisked away to the local headquarters and then kept waiting in an anteroom for more than an hour. His chair, after the twelve days in space, achieved a genuinely excruciating hardness before Doctor Fyloid sent for him.

The doctor beamed at him. "Sit down, Lieutenant Mohrlock."

"If it's just the same with you," Mohrlock said, "I'd rather stand."

The doctor's smile broadened. "Doctor Rudieb rendered a very complete report on you. I've been studying it."

"Generous of you, I'm sure," Mohrlock said, eyeing the smile uneasily. He had a lurking suspicion that Fyloid was a sadist who'd found the perfect profession for the indulgence of his crass impulses. The extent of his smile was probably an indication of the severity of the punishment he was about to inflict. When he ordered an execution he'd have difficulty containing his hilarity.

"You seem to have been remarkably uncooperative on Bal," the doctor said. "Why?"

"Sometimes I have streaks of stubbornness," Mohrlock said grimly. His mind kept wandering, and he had to take a firm grip on it and ask himself what he was doing there. He remembered Doctor Fyloid, of course, but it was strange the way the criminologist reminded him of someone, reminded him of—yes, the little clerk on Bal! It struck him as a remarkable coincidence, because they did not look the least bit alike.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The little clerk's face had expressed nothing at all. The doctor's face epitomized smug superiority.

They had in common only the long Dalusian neck.

"This is a triumphant moment for me," Doctor Fyloid was saying. He looked triumphant. "I am happy to inform you that you are cured."

"Cured?"

"The nature of your crime, the unnecessary violence with which you committed it, your obvious conviction that the violence had been necessary, made us suspect that you possessed latent homicidal impulses. If true, there was a grave danger that you might yield to them again. The purpose of your confinement on Bal, was, of course, to give you the opportunity to purge yourself of them. Doctor Rudieb feels that our diagnosis was in error, but my own conclusion is that you had the homicidal impulses, but that you learned to contain them. I have your release papers here, and I shall sign them with pleasure."

"Release—you're turning me loose?"

"Certainly."

Mohrlock took a step toward the desk. "Bal—purged myself—contained—then—you mean the pickpockets and the robbers and all of the other Type B Citizens on Bal are there to purge themselves—"

"That is correct."

"And you intend to keep them there until they refuse to—to—"

"Correct again. We have an obligation, not only to our society but to societies everywhere. We cannot release these convicted criminals to prey on their fellow men. We must confine them until they have learned to contain their criminal impulses."

"That's monstrous!" Mohrlock exclaimed. "You give them a quota of crime, and threaten all kinds of dire consequences unless they fill it, and when they follow your orders then you say they haven't learned to contain their criminal impulses!"

Doctor Fyloid smiled peacefully. "Are you attempting to give *me* a lecture in criminology, Lieutenant?" He shuffled the papers on his desk, scribbled his signature. "There you are. Go out through that door, please. Doctor Laime is waiting to give you your hypnosis treatment. Nothing drastic, just a little memory blurring. Naturally we cannot allow the general public to become aware of the details of your cure, or our criminological technique would be rendered invalid."

Mohrlock ignored the papers. "The A's!" he exclaimed. "What are you trying to cure them of?"

"Ah! You are of course unaware that Daluse is the galaxy's most advanced center of robotics. It isn't widely known, but our achievements in that field are quite as distinguished as our work in criminology. It is only logical that we criminologists should make use of the Dalusian robotic technique."

"Robots," Mohrlock muttered.

"Precisely. Surely you don't imagine that we would permit our criminals to relieve their impulses on *humans*. Our unique criminological laboratory on Bal would be impossible without robotics. When our

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

work is finally completed, Lieutenant, we confidently expect to banish crime from civilized society. Your own contribution, small as it is, should be a measure of tremendous satisfaction to you."

"Robots," Mohrlock muttered again. "I went through weeks of hell to keep from murdering—robots!"

"Here are your papers, Lieutenant. Through that door, please."

Mohrlock leaned across the desk. The face that grinned leeringly into his was not Doctor Fyloid's, but that of the little clerk—a robot face. It's expression changed to one of astonishment as he reached out and tentatively gripped the alluring Dalusian neck. He did not really exert pressure until the little clerk began to struggle.

A robot.

He stepped back, finally, and the face toppled out of sight behind the desk. Mohrlock meekly picked up the papers, and walked through the door Doctor Fyloid had indicated.

Another long necked robot stepped forward to meet him, and took the papers. "I'm Doctor Laime," it announced. "If you would sit here, please—thank you—and watch the light—"

Mohrlock submitted resignedly. His next conscious awareness was of a room full of excited, argumentative robots.

"But I had already begun!" shrieked the one that called itself Doctor Laime. "He may not remember!"

"Remember what?"

The Circle of Justice was as unreal as a half forgotten nightmare. The tentacles of the Truth Detector entwined about Mohrlock menacingly. He met the Chief Jurist's gaze with a scowl. He remembered long necks like that, from somewhere. Robots, weren't they? Amazingly realistic robots. Produced by the most advanced robotics in the galaxy — and where had he heard that?

"Lieutenant John Mohrlock, did you terminate a human life by strangulation?"

"How's that again?" Mohrlock asked.

"You will answer the question, please. Yes or no."

"Certainly not!" Mohrlock said, making no effort to control his indignation. The idea—all he did was push a robot around, and they asked him if he'd terminated a human life!

"Positive," the long-necked technician announced.

Doctor Laime's voice came from the Witness Dais. "He must have done it. No one else entered the room. But the hypnosis—"

"Nevertheless," the Chief Jurist said, "we cannot be certain, and Dalusian Justice must be certain. You know perfectly well that the law requires a positive record of an admission of guilt or a negative record of a denial of guilt. An exceedingly unusual case, I am sure. Dismissed!"

Mohrlock walked thoughtfully from the Arcade of Justice into the bright sunlight. He had the idea that he ought to be elated, but instead he felt only a disturbing puzzlement.

He was free, the court had re-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

turned to him a substantial sum of money that he didn't remember acquiring, and—what *had* all the excitement been about? A robot? With so many long necked robots about everywhere, one less shouldn't have made that much difference. They acted as if it were a capital crime to put a robot out of commission. The jurists had been robots, too, which may have accounted for the fuss—but in that case why had they turned him loose?

An hour later he was in a bar, having his fifth or perhaps his ninth drink and beginning to feel pleasantly relaxed, when his elbow was jostled by another blundering robot. Angrily Mohrlock flung his drink into the startled robot face and seized the long neck. Eventually other customers pulled him away, but not before the robot was wrecked beyond repair.

"Lieutenant John Mohrlock, did you terminate, a human life by strangulation?"

WASTED ON THE YOUNG
by John Brunner
COMMITTEE OF THE WHOLE
by Frank Herbert
WAR AGAINST THE YUKKS
by Keith Laumer
All in the April *Galaxy*
On sale now!

"Certainly not!" Mohrlock snapped.

"Positive," the technician announced.

A long-necked robot leaped to its feet, arms gesticulating pathetically. "Something is *wrong*. A dozen witnesses saw him do it. He had to be forcibly restrained. We *must* have this man for further study!"

"Doctor Laime," the Chief Jurist said icily, "you will kindly familiarize yourself with the law before you raise objections in my court. What you propose is ridiculous. Dalusian Criminology is the most advanced in the galaxy, as you should be well aware, and the Dalusian Truth Detector is infallible. The accused's denial is positive. Dismissed!"

A second time Mohrlock strolled from the Arcade of Justice into the sunlight. A long-necked robot crossed his path. Almost instinctively he veered off to follow it. He couldn't remember anything that had given him as much pleasure as he got from smashing these robots.

At the same time he had a dim awareness that he could not go on destroying expensive machinery indefinitely without being punished. The punishment did not particularly worry him, though, because he already knew all about it. They would ship him off to a nice town where a lot of long-necked citizens lived—but of course *they* wouldn't be robots. They'd be real people, nice people, so naturally he couldn't harm them.

The robot turned a corner, and Mohrlock quickened his pace to overtake it. END

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

NOW MONTHLY!

(effective with July issue)

IF SCIENCE FICTION

brings you the finest in science fiction

Don't delay—send in your subscription order today and get the new, better-than-ever MONTHLY issues of IF delivered to your door, bringing you stories by all your favorites in science fiction!

KEITH LAUMER

His celebrated Retief stories and others appear regularly in IF—fast-moving, comic yarns of diplomatic skullduggery out on the frontiers of the stars!

A. E. VAN VOGT

Famous author of SLAN and THE WORLD OF NULL—Appears often in IF with great new stories like THE EXPENDABLES, THE SILKIE, THE REPLICATORS—and many more still to come!

And coming soon—

E. E. SMITH, Ph.D.

Fourth and greatest of the immortal "Skylark" stories, his brilliant new **Skylark DuQuesne** will be one of **IF's** most memorable serials!

SUBSCRIBE NOW AND SAVE MONEY TOO!

Send in your order today and we will send you the next 19 BIG ISSUES for only $6.75—saving you $2.75 over the newsstand price. But act now!

SUBSCRIBE TODAY!

Use this order blank or order by letter—but don't delay!

IF—Subscription Department
421 Hudson Street, New York, N. Y. 10014

Yes, send me the next 19 issues of IF! I enclose $6.75.

☐ New ☐ Renewal

Name .....

Address .....

City ..... State ..... Zip No. .....

(Outside of N. and S. America add $1.50 for postage)

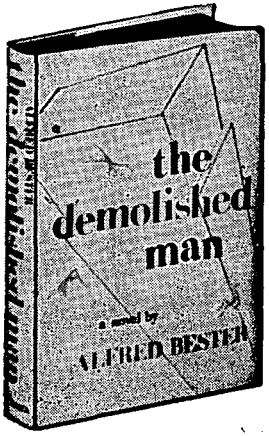
LICENSED TO LHZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

BESTER'S BEST!

Have you read his famed THE DEMOLISHED MAN? Lived in its vividly real telepathic society, detailed so ingeniously and dramatically that, finishing the book, you'll find it hard to believe that society doesn't exist — yet!

By special arrangement with the publisher of THE DEMOLISHED MAN, we can offer you this magnificent book for $1.00, 2/3 off the regular price, plus 25¢ for postage and handling.

⅓ OF LIST PRICE



CASE BOUND $1.00

Supplies are limited! Send your order in immediately!

(Use Coupon or Separate Sheet)

GALAXY PUBLISHING CORP.

Please rush me ☐ copies of THE DEMOLISHED MAN

421 Hudson St.
New York
14,
N. Y.

THE DEMOLISHED MAN
The Original Edition — Complete!
Not A Low Cost Reprint — Yet Yours For Only $1.00!
Plus Postage 25¢

Name_____

Address_____

City_____ State_____

I Enclose_____

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED